# Telephony.

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*Comprising Telephony, American Telephone Journal, Sound Waves, Telephone Magazine and The Telephone*

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**The International Convention.**

From all indications the coming convention of the International Independent Telephone Association will be the largest and most interesting ever held by the organization. Not only will the attendance be record-breaking, but practically all the men in the Independent field with large interests will be present.

The completed program gives some idea of the topics to be discussed and the action of this convention will be epoch-making. The banquet, which will be held on the second evening of the meeting will be a very elaborate affair, and a number of prominent speakers will make addresses. An entertainment committee, having in charge the banquet and entertainment of the visiting telephone men, composed of J. G. Ihmsen, H. D. Critchfield, L. D. Kellogg, E. E. Yaxley and H. B. McMeal, has completed all arrangements for the comfort and pleasure of those attending.

An earnest appeal to all telephone men to attend this convention is being made by the Association and those prominent in Independent telephone work.

The convention will last for three days, commencing Tuesday, December 7, and ending Thursday December 9. A reception committee has been appointed to introduce visiting telephone men to the officers of the National and State associations, to the end that every one may be acquainted with the active heads of the different associations throughout the United States, and to promote closer feeling among all Independent telephone men.

It is desirable that every man interested in Independent work attend this meeting of the Independent Association, and as no one can tell how many important matters are coming up, and all the interesting things that will occur, both on the program and off, it is safe to predict a crowd.

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LAST CALL.—Mail one copy of your paper for the Practical Conference to Chairman G. R. Johnston, Columbus, Ohio, and bring one copy with you.

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**How Much of the Farmers' Billion Will Be Spent for Telephones?**

This year the farmer is the man who cuts the big figure in business. Those of us who have talked with him, and heard his hearty laugh at tales of panic in business, realized it long ago. But Secretary Wilson, in the report of the Department of Agriculture, puts the statement in figures.

His report for the year 1909 says: "The value of farm products is so incomprehensibly large that it has become merely a row of figures. For this year it is $8,760,000,000, a gain of $869,000,000 over 1908. The value of the products has nearly doubled in ten years."

Of course, the number of farmers and the area under cultivation increased some over the previous year, but, allowing for this increase, the figures still show that a sum of money so huge that the mind can hardly grasp its meaning exists in the farmers' possession. And, to all intents and purposes, this money is a *surplus*.

In 1908, farmers got along very comfortably. A good many of them bought automobiles, took expensive traveling vacations, improved their buildings, bought new machinery, spent goodly sums for comforts and luxuries, and then had something to invest. Now, for 1909, we find that the farmers have produced $869,000,000 more in crops than the year before. As they got along all right last year on what they had, the additional near-billion comes pretty close to being what we call "velvet." This is a tremendous wad of money. It is so big that they can't possibly spend it all foolishly; they will have to invest a lot of it.

Telephone service has made good with the farmer. He wants more of it, and a better quality than he was satisfied with a few years ago. He has money enough to buy all he wants. Here is a problem in big salesmanship for the people who can supply it.

### An Indiana Editorial.

The Ft. Wayne, Ind., News expresses a well founded public sentiment in the following editorial:

"If the owners of the New Long-Distance Telephone Company really sold to the Bell, as it seems practically certain, they were guilty of a serious betrayal of public trust. It will be remembered that when they organized, some years ago, they appealed to the people for support on the ground that they were fighting a monopoly. The asked-for support was given cordially, and the people, often accepting an inferior service at a price practically as great as that exacted by the Bell, threw their aid and moral influence to the new company. So bulwarked and buttressed, the new company prospered and grew. It had the people with it, for it assured them that it was their friend and champion. And now we are told that it has commercialized the prestige which it obtained under false pretenses and has sold out to the very power it affected to abhor. Such exploitation of the public for gain may be mighty good business, but it is also mighty poor morals. The whole transaction is entirely too suggestive of one Judas Iscariot, and that little deal in which thirty pieces of silver figured as a purchase price."

### A Convention Number Built on a New Idea.

When the Independent manager goes out and meets the man in charge of the local competitive exchange at the club, he is liable to crow over the agent of "monopoly" because his own position is more agreeable in the way of emoluments, power to act on his own initiative, and other features which tend to satisfy the human mind. And it seems to be, indeed, the fact that the Independent manager does get more out of his job, while at the same time he has to put more into it.

Purchasing equipment is just one little feature of his multiplex duties. Yet the amount of technical knowledge, combined with very definite information on the news of progress, which a manager must possess to execute this work satisfactorily is somewhat astonishing. He must keep posted on materials, methods of assembly, electrical matters, traffic subjects, the feelings of the public—no element can be forgotten.

This week TELEPHONY is able to shed some little light on this proposition by its special number devoted to the equipment manufacturing branch of the Independent industry. The exhibits will be a big feature at the convention, but for those who cannot attend the meeting, TELEPHONY is doing its best to bring the exhibits to their homes. Yet this special number has a bigger meaning than all that. It shows what a tremendous industry the mere manufacturing branch, which supplies only the growth and reconstructive elements of the Independent telephone business, has come to be. Judge it any way you will, by external factory appearance, floor space occupied, numerical strength of personal organizations, capital invested, it is a stupendous industry in itself. And when it is recognized that this is the smaller feature of the whole Independent industry, one can arrive at an idea of what an enormous showing the operative branch would make if it could be assembled, as the manufacturing plants have been, although inadequately, in the pages of a book.

Another conclusion which the reader of this issue cannot help having confirmed with renewed emphasis is the power for progress which has been exerted by competition among manufacturers. This subject is so admirably discussed in Mr. Manson's article that we wish to do no more than commend it to the careful consideration of our readers.

### Was the Telephone Company "in Cahoots" With the Burglar?

One of the most far-fetched attempts ever made to impose liability upon a telephone company recently occurred in Kentucky, where one Elizabeth Jenkins sought to hold a company liable for more or less consciously being "in cahoots" with a burglar. The telephone company had erected a pole, by legal authority, close to the house where Elizabeth lived. At the time, she protested against its erection and warned the company not to have it so close. She even pointed out to the company's agents that the pole would afford a way for burglars or other evil-minded persons to enter her premises, and warned the company that if any such thing should happen, she would hold it responsible. Clearly the plaintiff was possessed of the gift of second sight, for, true to her prediction, a negro burglar climbed up the pole, entered her house, assaulted her, throwing carbolic acid in her face, and departed with whatever of her possessions he could gather together. She charged that the erection of the pole in the place it occupied constituted a nuisance, so that the company was liable to her in the trifling sum of $25,000.

The court justly decided the case in favor of the telephone company, saying that it had a right to erect a pole where it did, and would have had an equal right to build a house there, through an opening of which the burglar might have entered her property; and that the company was no more liable in the one case than it would have been in the other. Jenkins vs. Louisville Home Tel. Co., 120 S. W., 276.

# Raising the Limit of Efficiency

**A Discussion of Some Effects of the Primary Force of Competition, Which is Responsible for Great Improvements in the Manufacture of Telephone Equipment**

By Ray H. Manson

Dependence in the telephone industry has always been placed on the manufacturer for the development of new apparatus designs. At first the maker of the telephone equipment dictated the exact styles; but later skilled men interested in operating plants became able to study the problems at hand, and arrive at logical solutions. Then the manufacturer began to build to the users' specifications. This era, it is true, did not start until the Independents became thoroughly established.

Under the old Bell reign, years ago, there was no incentive for progressiveness on the part of the individual operator. All that was required of this individual was to "make good" with the equipment furnished him. The fact that this apparatus would work successfully in one part of the country was taken as a criterion for its use in all other territory, notwithstanding that the operating conditions might be entirely different.

Mr. Ray H. Manson.

The rapid growth of the Independents created a demand for apparatus which at first exceeded the supply. Almost anything answering to the name "Telephone" would go, and an excessive price was willingly paid. The building up of several large manufacturing concerns was the natural result of this demand, but, up to this stage, the user took what was offered in order to get a quick start into the business.

As the supply of telephone apparatus approached the demand, competition among the different manufacturers became more keen, and caused one and then another to bring out the refinements needed to make his apparatus appeal strongly to men whose knowledge of the business was under daily development through the repair of defects encountered in the course of daily operation. But it is only natural that a very rapid development should take place when each manufacturer is striving to produce the "best equipment," designed to suit the users' requirements. Certainly, this is a strong combination of affairs, and one which has resulted in putting the Independent operating companies in the lead.

Every angle of the telephone business has been carefully exploited; millions of dollars have been spent on developments along new lines, some of which have been extremely radical. The fact that, speaking in a broad sense, the equipment produced has been almost uniformly successful shows with what care the subjects have been studied.

In the endeavor to produce good living profits on low telephone rentals, the demand has been created for equipment which is inexpensive to operate and maintain. This has led the manufacturers into new fields, and has been the cause of many of the later refinements, embodied in the telephone equipment of the present time.

In the early days it was the outside lines that gave the trouble, and constituted the source of one of the largest expense items in a telephone exchange. But in the last six or eight years there has been a great deal of attention given to the enginering and design of the outside plant, with the result that the underground and aerial cable and distributing systems, when properly installed and well maintained, cause but little trouble. One prominent operating engineer claimed a short time ago that this outside development was about to outstrip the improvements in subscriber's instrument design, as fully 80 per cent of the outside troubles, in a modern plant, were found to be in the old design of telephone. For a long time it was considered that if the apparatus worked fairly well it was good enough, and that a certain amount of trouble was to be expected. But these "Once in a while" troubles are expensive to handle, as each trip of a repairman represents a certain outlay, on account of salary and traveling expense, regardless of the fact that in some cases no material is necessary to make a repair or adjustment.

A large percentage of telephone troubles are due, primarily, to rough handling of the apparatus by subscribers. Before competition existed an attempt was made to offset this extra expense of maintenance by charging subscribers for the breakage. This method of conducting business has proven very unsatisfactory, and it has been put up to the manufacturer to supply the wanting elements in the telephone instrument.

Such points as this prompt the progressive manufacturer to work up new designs for the betterment of the telephone industry. When improvements fulfill a demand, there is a large market for the product, and the successful manufacturer of today is the concern which goes after these problems and works them out to a finish. It takes men of vast experience and careful training to handle this new development work satisfactorily. The industry will not stand for experimenting on the user, as in the older days. The new product must be right, and be thoroughly tried out, before being placed on the market.

Years ago it was thought that the telephone subscriber's instrument had been developed to its limit of perfection, but nearly every season brings out changes, which although not radical, are designed to increase efficiency, and make possible reductions in operating expense. Take a desk instrument, for example. At one time an extra rental charge was made when a subscriber demanded a desk telephone. This was to defray the greater expense of maintenance, as the parts were of a more or less fragile nature. The convenience of a portable instrument has caused the proportion of these telephones to increase, especially in the city exchanges, and today up to 90 per cent of the new instruments installed in some exchanges are of this type. Fortunately for the operating companies, there have been many improvements made in the desk instrument to prevent breakage. Otherwise the net earnings of the exchange would have been greatly decreased, regardless of the extra rental charge for the desk instrument, due to the excessive maintenance cost for old types.

Every operating man knows that a general demand has been created for an unbreakable, portable desk instrument; one which will stand an accidental fall from the desk to the floor. That an ordinary telephone will not stand such rough handling does not mean that it is defective in design. But the manufacturer who produces the article which comes nearest to being unbreakable, while it possesses all the other characteristics of a high grade telephone, stands the best chance to get the lion's share of the available business. Hence manufacturers have worked to bring out new lines of desk instruments which will put this

type of telephone in practically the same class as the wall instrument, as far as maintenance is concerned, with what success the operating men well know.

There are certain deteriorating elements in telephone apparatus which have been accepted by the user as a matter of course. The elimination of these elements, and the simplification of the equipment by skillful arrangement, or even cutting out unnecessary portions of the apparatus or circuits, greatly reduces the maintenance cost in the telephone exchange. Some of this indestructible and non-deteriorating apparatus costs more to produce than the old types, yet the customer willingly pays the difference, as the increased first cost is a small item when compared with the ultimate results.

What has been said of the subscriber's telephone equipment is true also of the central office apparatus, although of late new operating problems have been presented. These matters are being threshed out in the exploiting of the various switchboard systems which are now available for selection. Time, only, will tell what will be the ultimate type of equipment best suited to the business.

It is enough to say that competition between manufacturers has done much for the customer, as it keeps the former hustling to produce the kind of equipment which will give the best results. The customer is getting more value for his money than ever before, not only in the apparatus itself, but in the results which can be produced by its use.

# The Stromberg-Carlson Company

The Stromberg-Carlson Telephone Manufacturing Company was incorporated under the laws of the state of Illinois, in 1892, for the purpose of manufacturing telephone apparatus and its accessories. The factory was located in Chicago until April 1, 1902, when the company incorporated under the laws of the state of New York, with a capitalization of $3,000,000, and moved its plant to Rochester, N. Y. The factory is located in the eastern section of the city at the corner of University avenue and Culver road. This plant occupies a space of ten acres, on which there has been erected seven of the most improved type of factory buildings, offering the best manufacturing facilities possible.

It also manufactures aerial, underground and switchboard cables and magnet wire. It maintains chemical and electrical laboratories which have the duty of authorizing and acceptance of all raw material used in the manufacture of its various products. All the copper, lead, steel, tin, brass, fiber, rubber, silk, cotton, etc., is thoroughly analyzed and inspected in these laboratories. The inspection of every finished product is a thorough electrical and mechanical test. Quality in material and efficiency in operation make dependable products, which the company always endeavors to produce.

**Factory of the Stromberg-Carlson Telephone Manufacturing Company, at Rochester, N. Y.**

The officers of the company are Frank N. Kondolf, president; Edward W. Peck, vice-president; Wesley M. Angle, assistant secretary and assistant treasurer; J. Edmund Cooper, auditor. The several departments of the company are managed by the following: H. C. Slemin, sales and advertising manager; E. A. Reinke, sales engineer; C. E. Hague, chief engineer; L. B. Somerby, factory superintendent; T. C. Spencer, credit manager; A. M. Haubrich, Chicago branch manager, and S. W. Menefee, Kansas City branch manager.

Telephone apparatus for all kinds of service is manufactured, including equipment for use in mines, railway dispatching systems, private branch exchange and intercommunicating telephone systems, farmers' line equipment, central energy and magneto telephones, and complete multiple and non-multiple exchanges. Some of the largest multiple exchanges of the country have been manufactured and installed by the Stromberg-Carlson Telephone Manufacturing Company.

Besides the large force of experienced traveling salesmen employed by this company, branch offices have been opened in Chicago, Ill.; Kansas City, Mo.; San Francisco, Cal.; Seattle, Wash.; Portland, Ore.; Toronto, Can.; Charleston, W. Va., and Milan, Italy, where a limited stock of standard apparatus is carried, thus affording prompt shipment of orders received from any of these territories.

### Meeting of the Pittsburg Branch, A. I. E. E.

At the meeting of the Pittsburg branch, American Institute of Electrical Engineers, November 9, papers were presented by Mr. H. N. Muller, Electrical Engineer of the Allegheny County Light Company, on some "Applications of Concrete to Central Stations System," Mr. F. W. Scheidenhelm, Consulting Construction Engineer on the "Uses of Reinforced Concrete in Railway and Power House Work" and by Mr. Stephen Q. Hayes, engineer with the Westinghouse Electric and Manufacturing Company, on "Concrete Construction in European Power Plants."

# The Kellogg Switchboard & Supply Company

The story of the Kellogg Switchboard & Supply Company reads like a romance. Like Pallas Athene, who sprang from the head of Jove fully armed and mentally equipped to meet the emergencies of life, the Kellogg company seems to have had no youth, but was thrown into the world of activity and usefulness, ready to meet any requirement.

Common Battery Wall Telephone.

Like all types of genius, this company has had strenuous times. Surrounded for months by howling and murderous strikes, with her employes in constant danger, she won out and gave to Chicago the open shop.

Kidnapped by the Bell early in her career, she was finally restored to her parents, the Independent telephone interests.

This company, born of necessity, has ever been in the foreground. It has been the guiding star to wise men who saw the great opportunities offered by the telephone business. It was this company which stood by the brave and courageous men who fought the Berliner battles, and gave Independent people an untrammeled right to go into business. It gave money in needed quantities, and it gave the necessary encouragement.

A Kellogg Desk Stand, Built to Bear Hard Usage.

And it has given, above all, to its customers equipment that has enabled them to make money and put themselves on a permanent living basis.

Factory of the Kellogg Switchboard & Supply Co., Congress and Green Sts., Chicago.

The leader of this company was Milo G. Kellogg, himself born into the telephone business, as it were, being one of the founders of the Western Electric Company, which his father really furnished money to start. He began as a bookkeeper,

and finally became one of the best shop men in the world. He had the same fundamentals that have marked the life of George Westinghouse. Had his health been as rugged as that of Mr. Westinghouse, the world would have seen Mr. Kellogg equal him in achievement.

Mr. Kellogg finally retired from the Western Electric Company and spent much time in Europe, in the interests of his health, but all the time studying the needs of telephone affairs.

Five Bar Generator Magneto Set.

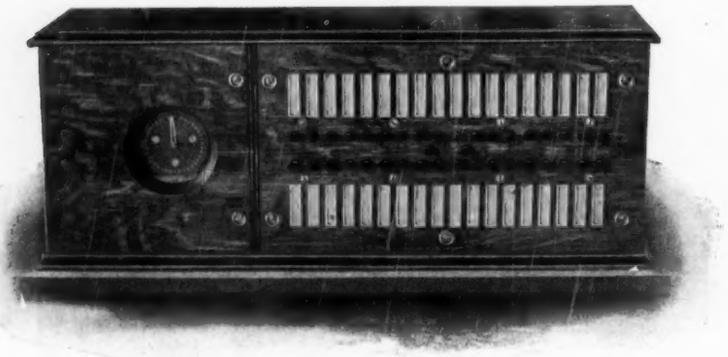
This looks like inspiration—this unconscious training that he was getting, which so ably qualified him as the great leader.

In 1896, brave persons drove the pick into the St. Louis pavements, thus marking the birth of the Kinloch Telephone Company. The writer saw this act, and at that time little dreamed that a great business was being organized, and that he would have a small part in it later.

The St. Louis interests soon came to switchboard requirements. By a chain of circumstances, Mr. Kellogg was discovered and he agreed to build their switchboard.

Accordingly, in 1897, the Kellogg Switchboard & Supply Company was incorporated and began operations in Highland Park, a suburb of Chicago.

Mr. Kellogg surrounded himself with good men, and he gave them free rein, too. Here was Mr. Kellogg's strength—he knew human nature and he builded the fortunes of the house upon its possibilities.



Selector for Railway Dispatching System.

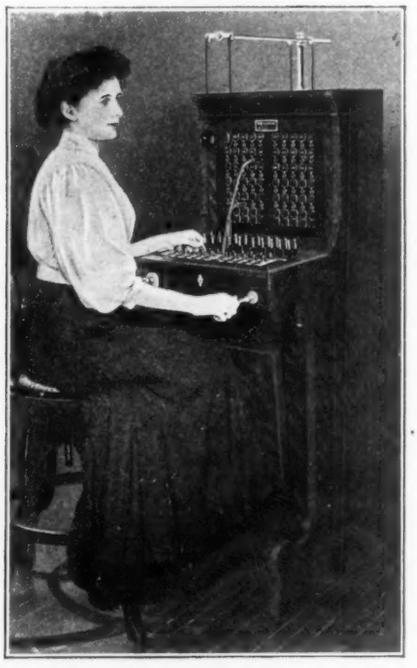
Other men have had equal if not superior opportunities of being handed down to future history as the Moses of Independent telephone development, but they were too selfish, and in trying to bear their early burdens alone, sank beneath their weight. Mr. Kellogg revolutionized the telephone business. Gentle reader, *he was the first employer to ever pay a telephone man a decent salary.*

In the present organization of the Kellogg company, Mr. L. D. Kellogg is vice-president and general manager. He is well equipped for the duties and responsibilities. A graduate of Yale, he was educated in the law. He is fully alive to the needs of the Independent telephone world, and will be a great force in its ultimate development.

Mr. J. B. Edwards is general superintendent, a member of the executive committee, and has particular charge of shop development. No man has had a better training, and his watchful eye and skilled hand have contributed as much to the success of the Kellogg company as any other force.

Mr. Francis W. Dunbar is the third member of the executive committee and has general charge of engineering and patent work. He needs no introduction to the reader. Mr. Dunbar's impress upon Independent development is permanent.

Mr. Seymour Guthrie is treasurer and secretary. As Mr. Edwards has been to the shop, so Mr. Guthrie has been to the accounting. He is broad-minded and liberal. His position is the hardest to fill, and he does it creditably.



50 Line Magneto Switchboard Equipped with Kellogg Self-Restoring Drops.

Mr. Charles S. Winton is chief engineer, and like Mr. Edwards and Mr. Guthrie, is invaluable in his work. Quiet and unassuming, he does his work well. Because of his keen attention to detail, no switchboard has ever been returned and no useless expense has ever been incurred. No man has such a record of achievement in telephone engineering.

Mr. Harry G. Webster is well known as a telephone engineer and patent expert. He has been most prolific in useful designs and ideas.

Mr. A. H. Dyson, as Mr. Webster and Mr. Dunbar, was associated with Mr. Kellogg for four and one-half years. He appreciated at a very early date the ultimate importance of automatic telephony. Some of his many improvements and inventions are in use in practically all automatic exchanges now in operation.

Mr. Thomas H. Ferguson was associated with Mr. Kellogg as patent attorney. Prior to that time he was in the employ of

the General Electric Company as attorney. He is a Michigan graduate.

Mr. Curtis B. Camp is well known to the profession of patent law. He has successfully handled the legal affairs of the company for the past six years. Among his achievements is the successful issue of the suit upon the justly celebrated transmitter patent. He is a graduate of Iowa State University.

Mr. J. C. Kelsey, sales manager, has been connected with the company for five years. He is well known also as a teacher of telephone engineering and as a consulting engineer to certain great financial interests. He has been a contributor to Independent journals, and a steady visitor to all state conventions.

In addition to human equipment, the Kellogg company is equipped with machinery suitable for the manufacture of its product. When a man buys from the Kellogg company, he knows that it is made at the factory by skilled labor such as Chicago commands to so remarkable a degree.

Over 5,000 Kellogg switchboards have been put into service by Independent interests. Nearly 1,000,000 transmitters have been sold.

Kellogg common battery exchanges have been in service for nine years, and no symptoms of wearing out are yet in sight.

The Kellogg harmonic selective telephones are known the world over. The use of this harmonic apparatus has contributed as much to Independent success as any other force.

Kellogg railway telephone dispatching apparatus is recognized as a leader, and is in use on many of the principal railways.

The Kellogg company handles poles and supplies. It has an immense pole yard at Escanaba, Mich.

Kellogg condensers are famous, and are used by numerous manufacturing companies exclusively.

The factory is situated at the corner of Congress and Green streets, has nine floors and an area of 118,000 square feet. The general and factory offices are all situated in this building.

In addition, there are three large warehouses, with an area of 71,000 square feet.

The wood-working plant is located at Cassopolis, Mich., and consists of seven buildings with an area of 46,000 square feet.

This makes a total area of 235,000 square feet, or six acres.

3,000 Line Kellogg Board and Chief Operator's Desk at Appleton, Wis.

The pride of the Kellogg company is its magnificent magneto telephone business. No other institution of its kind has such a record of sales in this most important branch.

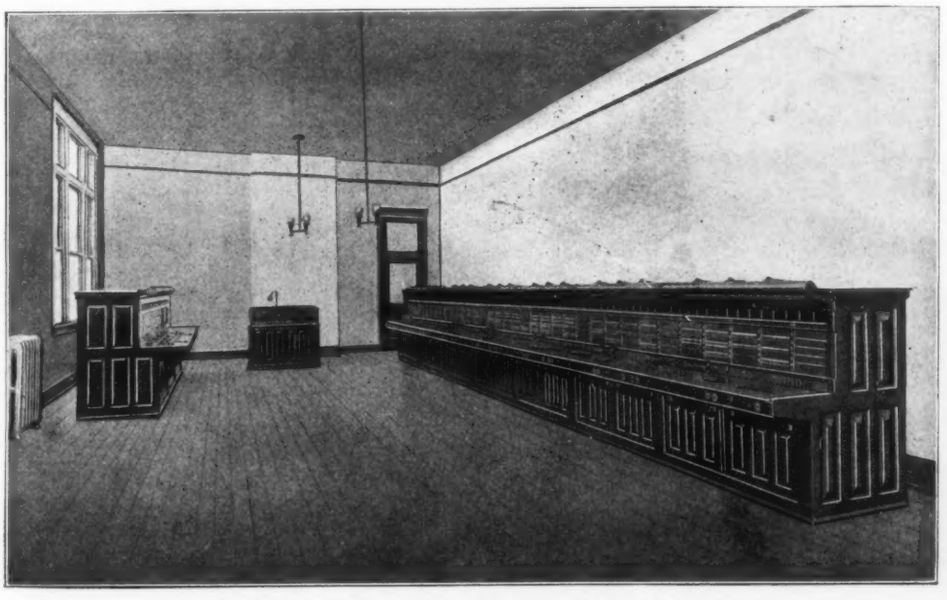
It has been the policy of the company to protect the original Independent company, and it has never encouraged any competition nor trouble for it. That this policy has paid is fully demonstrated by the company's output.

Another source of pride lies in its foreign business. Kellogg transmitters and devices have been adopted as the standard by several European governments.

The Kellogg company has delivered $20,000,000 worth of apparatus to Independent telephone companies.

The total losses of the company due to uncollected accounts, after twelve years of business, are less than $18,000.

Think of it! This is less than one-tenth of one per cent. Can you beat such a record for honesty and stability in any other line of activity?



Kellogg Toll Board, Merriam Park, St. Paul, Minn.

The Independent Telephone interests are founded on the rock of honor and merit, and the officials of the Kellogg company are proud to cast their lot with Independent destinies.

Twelve years ago the Kellogg Swithboard & Supply Company installed its first system. Today Kellogg telephones are in service in every quarter of the globe. A complete and thoroughly equipped factory employing over 600 skilled artisans, turning out high grade telephones, switchboards and telephone apparatus, speaks for the success of the first installations and the reputation that Kellogg apparatus enjoys.

The Kellogg Switchboard & Supply Company was one of the first Independent companies to manufacture common battery telephones, and during the first four years of the company's existence, built large exchanges exclusively. Many of the more important and attractive appliances were originated by the Kellogg company, and its improvements in the multiple system were recognized as a wonderful advance in multiple switchboard work. Constant imitations of the Kellogg apparatus have

shown its superiority, as well as the unequaled service for which it is noted throughout the world.

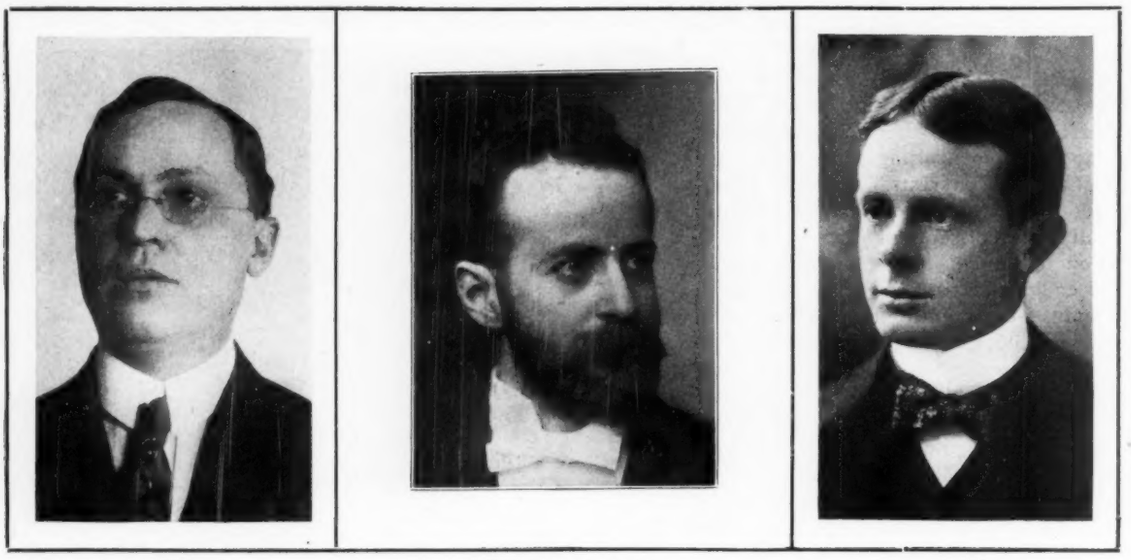
The Kellogg harmonic system and magneto switchboard improvements are well known, and their value as Independent telephone apparatus is the more evident when the long working service of Kellogg telephones, switchboards and complete exchanges is considered.

The Kellogg company has manufactured so many telephones to work in connection with large exchanges that its experience in the production of all types of telephones is unrivaled in its breadth and comprehensiveness.

The high character of Kellogg apparatus is not confined to this country, but anywhere abroad the stamp of Kellogg manufacture is a guarantee of a standard of excellence in telephone work.

Kellogg telephones and switchboards are Kellogg from box to switchboard, and from cabinet to jack strip; not picked up here and there, half manufactured, half bought, or fitted out with untried novelty parts or attachments that often make operation complicated and uncertain.

Kellogg telephones are built from start to finish in the company's own factory.



J. B. Edwards. Francis W. Dunbar. L. D. Kellogg.

The Kellogg main factory contains 118,000 square feet live, used space, fitted with complete equipment for the best production of every telephone part.

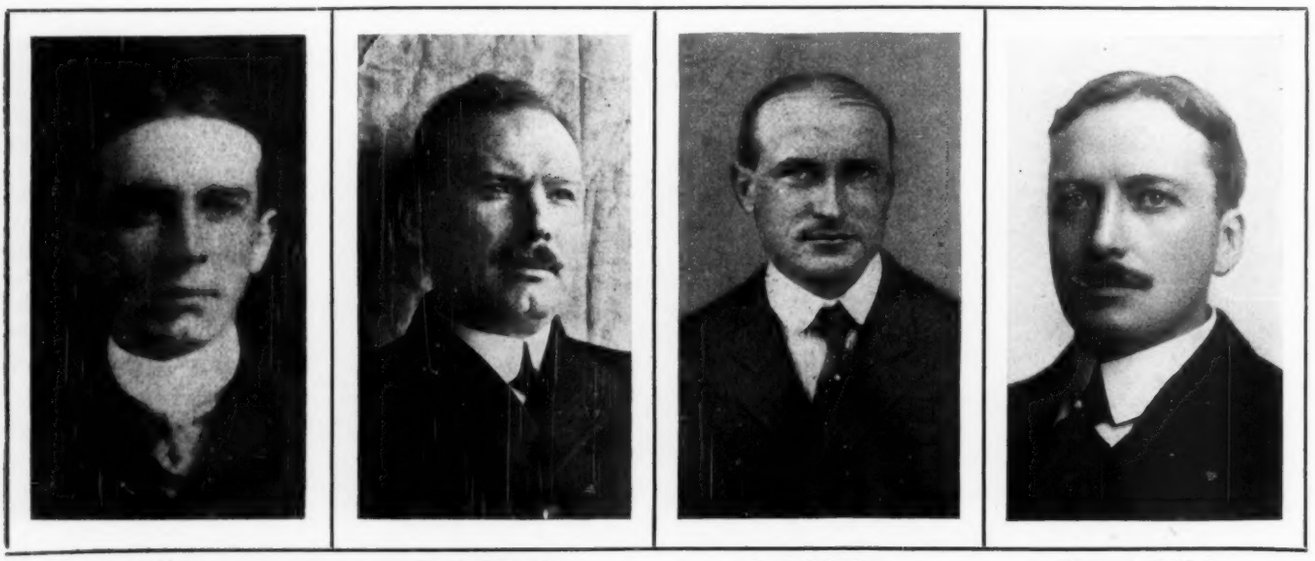
Convenient to the main building is factory No. 2, 30,000 square feet, for the wiring of switchboards, cabling, equipping the cabinets, assembling iron racks and frames, and power switchboard departments.

The Kellogg woodworking plant occupies seven separate buildings, 46,000 square feet; all rooms well lighted and containing every machine for the perfect production of telephone and switchboard boxes.

Two warehouses, 41,000 square feet, hold the raw material and line supplies, arranged for quick assembling and filling every order, large or small. The company considers the prompt shipment of an order as important as the correct filling of it.

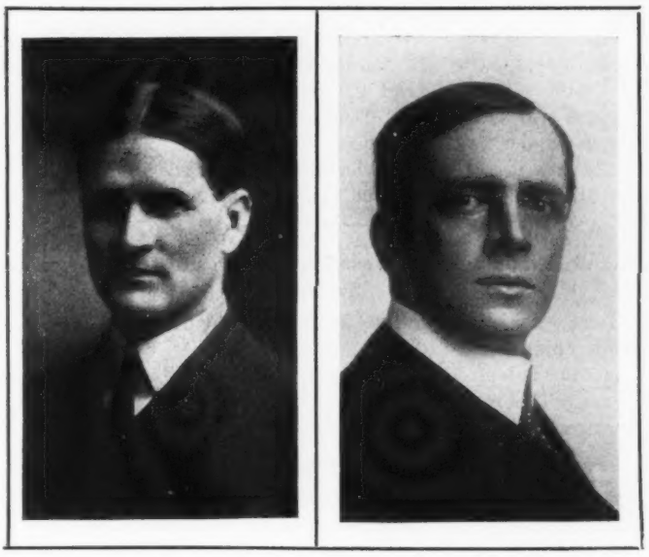
With every facility for the best production of telephones and switchboards, the reasons for the unequaled records and long life of the finished apparatus sold from the Kellogg plant are evident to all who pay attention to such matters.

The personnel of the executive force at the head of the Kellogg organization, as well as the entire board of directors, are men well known in the telephone field, and have always



C. A. Simpson. T. H. Ferguson. C. S. Winston. Seymour Guthrie.

been a vital power in its growth and strength. The present officials are L. D. Kellogg, vice-president; Seymour Guthrie, secretary and treasurer; J. B. Edwards, general superintendent; J. C. Kelsey, sales manager. The board of directors consists of Messrs. L. D. Kellogg, J. B. Edwards, J. G. Kellogg, F. W. Dunbar, Kempster B. Miller and W. L. Coffeen. The executive



J. C. Kelsey. Harry G. Webster

committee is made up of L. D. Kellogg, F. W. Dunbar and J. B. Edwards.

The engineering and patent department includes F. W. Dunbar, C. S. Winston, H. G. Webster, A. H. Dyson, Thomas H. Ferguson, C. B. Camp, C. A. Simpson and associates.

### Detroit Mayor Advised to Take City's Own Telephone Property.

Joseph W. Martin, former secretary of the defunct People's Telephone Co., of Detroit, seems to think Mayor Breitmeyer's plan to institute a municipal line and thus regulate the two local companies, is "bunk," and suggests that, if it is not, "the mysterious manner in which the Bell people gained possession of the property of the People's company, in spite of the forfeiture clause, be investigated."

Said Mr. Martin, "The People's company, which owned $350,000 worth of property in the streets, ought not to be confused with the defunct Co-operative company which was taken over by the Home Telephone Co. I secured the franchise and I drafted the forfeiture clause. It was on the strength of that clause that we secured a franchise from the city. The corporation counsel declared the clause was legal.

"As secretary of the defunct People's company I know there was $350,000 worth of property put into the streets. The Union Trust Co. bought this property from the owners of the People's company, who were Messrs. Everett, Moore and Pack. The property was sold the trust company, which was receiver for the embarrassed Michigan company. Later the Michigan company bought the property. It was all very mysterious. But did that use of a third person in the purchase vitiate the forfeiture clause? I think not.

"I believe the city, is today, the rightful owner of that $350,000 worth of conduits, poles and wires. It may be contended that the title to the foundation of the People's company's site for a station now occupied by a big building should rightfully rest in the city.

"And if the Michigan State Telephone Co. did purchase the property of the People's company rightfully, what right has it to use conduits and poles in the city streets, permission for the construction of which rested in an ordinance which called for a telephone rate of $25 and $40, whereas the Michigan company is now charging $74 and $42 for telephones served by these very means."

A special committee proposes to go into the details of the deal and if everything is not found regular the corporation counsel will be instructed to take steps to protect the city's rights.

### Cuban Telephone Bonds Placed in London.

Reports from London announce that the Cuban Telephone Company has recently closed the subscription lists for £1,050,000 5 per cent first mortgage convertible bonds, part of an authorized issue of £2,000,000, at the price of 92 per cent. Principal and interest are payable free of all United States taxes, and the principal is due July 1, 1949, but the bonds are redeemable at the company's option at 105 per cent from the end of June, 1921, on six months' notice. The bonds are convertible at the option of the holder at their face value into common stock at a price of $125 per share of $100 after January 1, 1910, and before July 1, 1920, while the trust deed will provide for a sinking fund of 1 per cent per annum, commencing in 1920, to be applied in the purchase of the bonds at or below par and accrued interest.

According to a letter from a director of the company, the purposes of the present issue are to take up the whole of the underlying bonds of the Havana Telephone Company, amounting to $1,200,000, the whole of the bonds of the Havana Subway Company, amounting to $700,000, and to provide a further sum of about $3,000,000 for the extensions of the present system, and the construction of other systems and long-distance lines. The $1,200,000 of 5 per cent first mortgage bonds and $2,000,000 capital stock of the Havana Telephone Company and $500,000 of 5 per cent first mortgage bonds and $200,000 of second mortgage and $370,000 of capital stock of the Havana Subway Company form part of the fixed security under the trust deed, and will be deposited with the trustees.

The present net earnings of the Havana Telephone Company are at the rate of over $200,000 per annum, but without any increase in the number of subscribers under the new system, the earnings will be greater, as the royalty payable to the government under the new concessions is 4 per cent on the gross earnings, whereas the rental paid hitherto has been over 6 per cent, and in addition there will be an estimated saving of $40,000 in the cost of operation, resulting from the installation of the modern equipment now being installed. The earnings of the present system, together with those of the Subway company, are sufficient to pay the interest on the whole of the bonds without taking into account the revenue which will be derived from the increased installations, while the prospectus shows that the revenue in the early future will be very much greater.

William A. Patterson, of New York, is president of the Cuban Telephone Company, and the directorate also includes the following New Yorkers: Martin W. Littleton, H. W. Davis and William Lohman.

### Investigation of Bell Rates at Toronto.

West Toronto, Ontario, Canada, a manufacturing district and a freight divisional point on the Canadian Pacific Railroad, with a population of about 10,000 inhabitants, was, until recently, annexed by Toronto, a separate municipality. The Bell Telephone Company operates a system of about 350 subscribers there, and although West Toronto is but five miles from the center of the city, a toll charge of 5 cents is made on all outgoing and incoming calls between this ward, which since its annexation is known as Ward 7, and the remaining wards of the city. This charge is

made to all unless an additional rental averaging $30 a year over and above the rates in other parts of Toronto is paid.

The citizens feel that this action is an injustice and for this reason a special committee led by Alderman Church has been appointed to investigate the matter and endeavor to secure uniform rates by applying to the Railway Commission. Mr. Francis Dagger, secretary of the Canadian Independent Telephone Association, formerly telephone expert for the Manitoba and Saskatchewan Governments, one of the committee, gave the opinion at a meeting held recently, that the city would not be likely to obtain a reduction from the Commission or the company itself, and suggested that "The only way is to put in a plant of your own or give a franchise to an Independent company."

### New York Investigators Find Good Service at Buffalo.

The Davis legislative committee, which is investigating telephone conditions in New York State with a view to making recommendations as to the advisability of putting the industry under the Public Service Commission, found practically no complaints against the service in Buffalo when it visited that city. Senator George A. Davis, chairman of the committee, said that he was astonished that only four complaints against telephone service in Buffalo and one against the telegraph service had been made to the committee.

This seems to be another indication that competitive service means a satisfied public.

### Meeting of Arkansas Independents.

The Arkansas Independent Telephone Association met in regular session at Fort Smith, Ark., on the 22d and 23d of November.

While the convention was not largely attended, it was the most enthusiastic meeting ever held.

The following officers were elected for the coming year: President, Mr. W. T. Stuhl, Siloam Springs; vice-president, Dr. K. E. Hudson, Charleston; secretary, B. F. Kendrick, Pine Bluff; treasurer, Conrad Elskins, Paris.

After the discussion of some important questions, and the formation of plans for furthering the Independent cause in Arkansas, the convention adjourned to meet at call of the president.

### Complains to Railroad Commission of Milwaukee Rates.

Although conceding that the service furnished by the Wisconsin Telephone Company is good and sufficient, Attorney E. H. Hibbard has filed a complaint with the Wisconsin Railroad Commission against the company. "The people I represent," said Mr. Hibbard, "simply desire to get telephone service for what it is reasonably worth. What this rate is, no one knows, but it is hoped that this complaint will have the result of determining what constitutes a just scale of charges." The complaint also asks that the company be compelled to refund a portion of past charges to subscribers on the ground that they have been excessive.

### More Talk of Keystone Preferred Dividend.

A dividend upon the preferred stock of the Keystone Telephone Company may be declared before long. No such dividend has ever been declared, but the officials of the company think that they may be able to take such a step. Surplus earnings for October, which might be applied to such a dividend, amounted to $13,248, a gain of $2,331 over the corresponding month of 1908. At this rate, the Keystone is earning $159,000 per annum toward preferred dividends. For the first quarter of the current fiscal year the surplus was $48,748, a gain of $10,662 over the first quarter of 1908.

### Ad Valorem Tax Law Adds 127 Per Cent to Burden on Michigan Telephone Companies.

Secretary George Lord, of the Michigan tax commission, has estimated that $15,000,000 of taxable property has been added to the taxable property of Michigan by the law recently passed to tax telephone and telegraph companies on the ad valorem basis.

The last tax assessed against the companies, on the specific basis, amounted to $118,953.86, while the tax this year against the same companies and the new companies that have been formed will be about $270,000, a little more than double the amount under the specific tax.

This tax is to be divided among 809 companies or individuals operating telephone lines and the two telegraph systems.

### Grand Island Plant Consolidated with Larger Nebraska System.

Last week a controlling interest in the Independent telephone plant at Grand Island, Neb., was purchased by the Lincoln Telephone & Telegraph Company and its associates. The plant will be improved and operated in closer harmony with the Independent system than heretofore.

### Telephonic Remedy for Insomnia.

Prof. Duncan, of Morgantown, W. Va., in a test made recently proved that it is possible to put a person to sleep through hypnotism by long distance telephone, say newspaper reports. Mr. Duncan was given a clear wire through to the subject's home in Rochester, Pa., and after several stern orders to go to sleep the report was made by witnesses at the Rochester end that the patient had obeyed. Five hours after Prof. Duncan, it is reported, awakened the patient by telephone.

### Pointers for the College Graduate.

In an editorial comment on an address by Frederick W. Taylor, the *Electric Journal* says:

"The importance of actual contact with the workman—the man who earns his living by the skill of his hands—cannot be too strongly emphasized. The average college graduate has an undue and exaggerated idea of the value of a mind well stocked with book learning to solve the world's problems. A short time in the shop where manual work is done well and quickly by those who have had none of his valued mental training should cause him to realize that the preparation he has received is at least very incomplete. A little further experience shows him that the quality of mind possessed by many of the shopmen is in no way inferior to his own, bringing a realization that mental training can be had outside of the classroom.

"The value of the discipline and training given by doing, day after day, laborious and uninteresting tasks, is well brought out by Mr. Taylor, and should be thoroughly learned by every young man ambitious to succeed. Remember it is not only necessary to do the tasks to attain success; each must be well and thoroughly done. No shirking, no 'good enough,' but perfect, complete, absolutely to the mark in each piece of work, is the aim that will bring success and requires no special genius or unusual attainments.

"Those responsible for the success of business undertakings are not seeking for their lieutenants some genius or man of dazzling intellectual qualifications; they are looking for doers, men with judgment, experience and training, which can be secured only by discipline in the hard school of everyday work. A technical education should and will help a boy, but it must be understood to be only a help. Work and training bring success."

# The Automatic Electric Company

*What it is.*—The maker of automatic telephones and switchboards, the advocate of sound business policy and scientific factory methods, a stanch supporter of Independent telephony—such is the Automatic Electric Company.

*Who it is.*—Every movement owes its success to the skill and leadership of some one man, who possesses the power to draw around him those who have ability in their respective lines, and to direct their energies toward one common end.

Joseph Harris was born in Chicago, June 19, 1854, of German ancestry. He received his education in the schools of Chicago. In 1877 he married Miss Grace Cole. Their two sons, Sanford F. and Harmon A. Harris, are associated with their father in business.

Mr. Harris is a man of rare business ability and insight. It takes a seer to discern the future of an enterprise. Such a man with vision is he. He saw the value of the automatic, knew what might be done with it, and put his whole energy into the work. Ever since the beginning of the Independent telephone movement Mr. Harris has wielded a silent but potent influence for its advance, through the Automatic Electric Company which he built up, and the Strowger company, its predecessor. His business foresight has been abundantly justified by the results.

Of the three needs of commercial enterprise, inventive and creative genius, business ability, and salesmanship, the first is furnished for the Automatic Electric Company by Mr. A. E. Keith, who heads the group of engineers who have made the automatic what it is today. At the age of twelve he began work for the Baltimore & Ohio Telegraph Company at Baltimore. His first contact with the telephone was at the Centennial Exposition at Philadelphia. He was at once attracted toward it, and the following winter became an operator with the Bell Telephone Company at Baltimore. At the age of 22 he was sent by a Washington concern to Venezuela to install electric power and lighting systems. This he did, and ended by building a paper mill as well.

After being three years abroad Mr. Keith returned to the United States and entered the employ of the Brush Electric Lighting Company of Baltimore, Md. Three years later (1892) he was secured by the Strowger Automatic Telephone Exchange as engineer, and since that time his history and that of Automatic telephone have been one.

It is the good fortune of the company to have in a general advisory capacity a man of broad knowledge and business ability. Mr. H. D. Critchfield has had an active part in the Independent telephone movement since its beginning, and has abundantly shown his ability to plan and direct a forceful campaign. He is a lawyer by profession and practice, and has broad experience in legal and development work. In 1895 he was one of the six who organized the Mt. Vernon Telephone Company. In 1896 the Ohio Independent Telephone Association was organized and Mr. Critchfield was chosen secretary.

**Factory of the Automatic Electric Company, Morgan & Van Buren Streets, Chicago.**

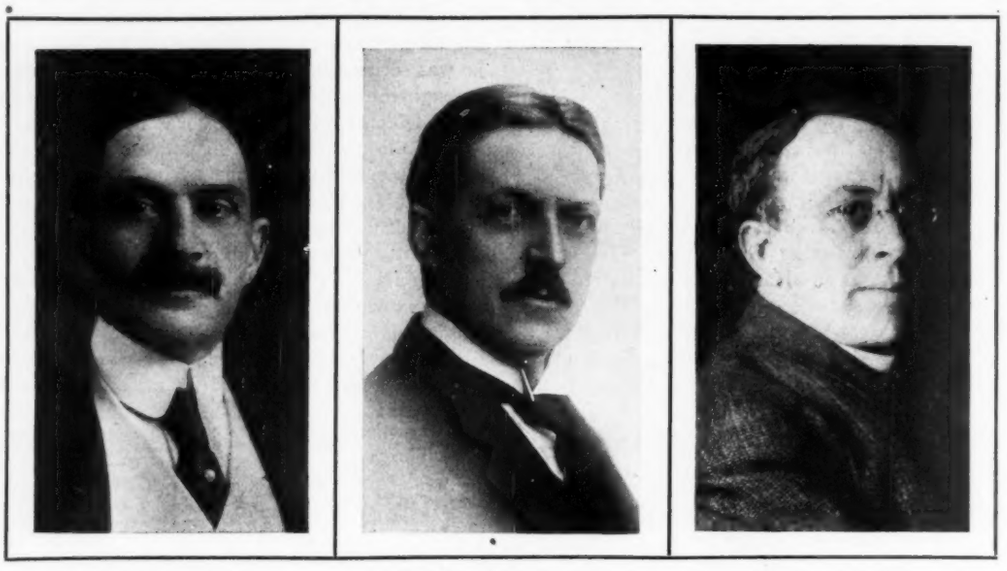
When, in 1897, the first National Association was organized he was made chairman of the constitution committee. When the International Independent Telephone Association was formed he was placed on the advisory board and was also the general counsel for five years. It was his privilege to be associated with other counsel in the famous Berliner case which freed the carbon transmitter to public use and greatly strengthened the Independent cause.

In 1898 Mr. Critcheld became associated with the Everett-Moore Syndicate at Cleveland, Ohio, and for four years devoted his active interest to developing their properties.

In 1901 the Automatic Electric Company called him to its assistance as general counsel in charge of legal and other affairs.

With the exception of one year, during which he suffered from severe illness, Mr. Critchfield has been steadily engaged in advancing the cause of Independent telephony. Having for a time been separated from the Automatic Electric Company, he was recalled to it during the summer of 1909. He has always been active in national Independent affairs.

It has been the policy of the company to employ the best of engineers. Many of its engineers have been engaged in the development of automatic equipment for more than fifteen years, either in the employ of the Strowger company or with the care of building and equipment. The first of these has the duty of preparing the plans and guiding the work of making apparatus and designing the actual equipment of exchanges. Manufacturing proper needs no explanation, consisting as it



Mr. Joseph Harris. Mr. H. D. Critchfield. Mr. A. E. Keith.

the Automatic Electric Company since its organization, and are now so employed.

*Business organization.*—The business organization of the Automatic Electric Company has behind it men of known standing and strength. The officers and directors are as follows: Joseph Harris, president; C. D. Simpson, vice-president; H. A. Harris, second vice-president; W. I. Patton, secretary; A. G. Wheeler, Jr., treasurer. Directors: C. D. Simpson, A. G. Wheeler, Joseph Harris, J. B. Russell, S. F. Harris, C. B. Eddy, A. G. Wheeler, Jr.

*Factory organization.*—The work is handled in five divisions: experimental, manufacturing, installation, sales and general.

Desk Stand at Automatic Subscriber's Station.

The experimental department carries on research work in electricity, mechanics and chemistry, the patent work and the testing of materials.

The manufacturing department is subdivided into four sections: engineering, manufacturing proper, factory office and does of the army of people engaged in the actual construction of automatic apparatus. The factory office has charge of orders, time accounts, costs and other accessory duties. A competent engineer with assistants has charge of the building and all machinery. The installation department has a large force of men on the road installing new exchanges and additions to existing plants.

The sales department includes the advertising as well, the latter being regarded as merely one of the means of selling the product of the house. There is also a foreign sales division, which looks after the work in Europe and other countries.

The general department includes the executive, legal, insurance, purchasing, traffic and auditing offices.

*Origin of the Company.*—Years ago there was in Kansas a struggling inventor named A. B. Strowger. Annoyed by the incivilities of girl operators he had become possessed of the idea that he could do away with them by mechanical means. At the opportune time Mr. Joseph Harris, a business man of unusual insight and ability, discovered the inventor and the invention, saw their worth and set about developing both. In the fall of 1891 he with others organized the Strowger Automatic Telephone Exchange.

Chicago was from the start the seat of operations, and the Rookery Building had the honor of sheltering the first activities of the new company. The next year (1892) saw the accession to the forces of Mr. A. E. Keith, who became a leading spirit in the technical development. That same year the first public exchange was installed at La Porte, Ind., as a demonstration of what the new-born automatic could do. In spite of its imperfections it gave the people a taste of automatic working and met with hearty public approval.

All the summer of 1893, Chicago was the mecca of the world. The World's Columbian Exposition at Jackson Park brought visitors from all parts of the earth and the automatic was exhibited with great success. People from England, France, Germany and Italy saw the crude switch and were mightily interested. They went back home and spread the news of the new invention, and America has been hearing from it ever since.

In early spring, 1901, the Automatic Electric Company was organized.

The original capital stock was $2,000,000 which was subse-

quently increased to $5,250,000. This new company at first manufactured apparatus under the patents held by the parent company, the Strowger Automatic Telephone Exchange, from which it had received a license for the United States.

The Automatic Electric Company continued to develop automatic apparatus, taking out from year to year many patents of a fundamental character. March 27, 1908, it acquired the stock of the Strowger Automatic Telephone Exchange, by which it became owner of the Strowger patents.

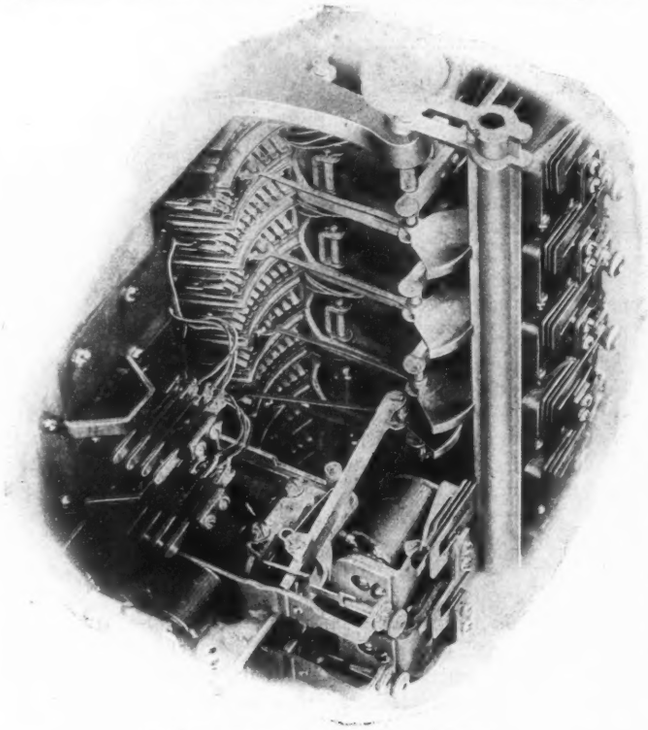
The year 1901 witnessed the installation of the Fall River, Mass., exchange, which marks the real beginning of the present system. Switches which were installed then are working today with promise of twice as many years' service to come.

The first factory of the Automatic Electric Company was located on the southwest corner of Washington and Union streets. Quarters becoming too cramped, the factory was moved to a fine new building at the southwest corner of Van Buren and Morgan streets. The building was 80x160 ft., six stories and basement, with total floor space of 90,000 sq. ft. This was in 1902.

*Present Factory.*—Soon the growth of the business demanded more space and the factory was enlarged to its present size. Allowing a space of 32 ft. for a court, an addition was built west of the older portion, thus enlarging the outside dimensions to 208x160 ft. Over the entrance to the court are located the offices. The total floor space is 187,000 sq. ft.

*Factory Policy and Methods.*—It is the policy of the Automatic Electric Company to know beforehand just what each article will cost and keep strict account of the use of material and the performance of labor. Labor, material, time—all are *money* and should be treated as such. Accordingly the method of handling material and labor is as systematic as accounting in a bank and as exact as possible.

Each new design is first passed upon by the engineering department and its form and material decided. Drawings are



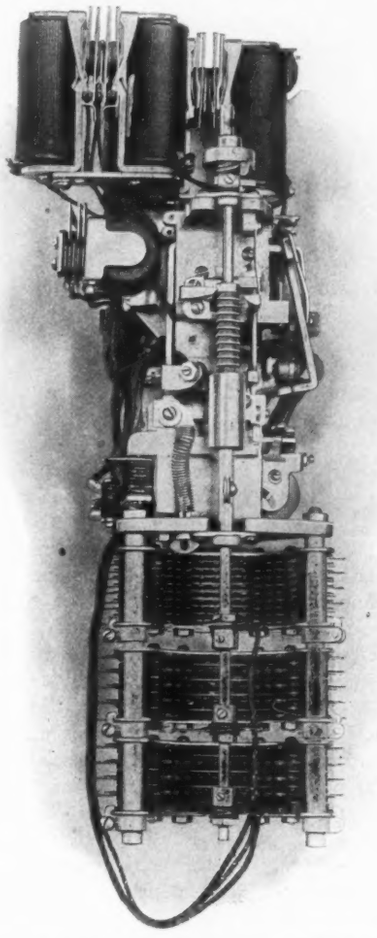
Interior View of Keith Line Switch.

then made, and an estimate of the necessary tools and their cost.

From the drawings and the results of past experience the exact amount of raw material necessary to make 1,000 pieces is calculated, also the amount of scrap or waste. Nothing is left to chance or accident.

In a similar way labor is computed. From past records it is known how long each operation takes and the necessary amount of lost time for changing dies, getting new stock, adjusting machinery, etc.

No order is issued to a factory department to do work un-



Connector as Used in Automatic Exchange.

less it is known that proper stock is on hand and available. If the stock is on hand, an order is sent to the factory foreman to make up the pieces. Simultaneously the stock room is ordered to deliver the correct amount of stock to the foreman concerned. No foreman can order out stock. From the stock delivered he must make the full number of parts ordered.

If a shortage occurs from defective material, accident in a machine, etc., the defective material or marred parts will be accepted in settlement. Otherwise no exceptions are made; there must be no leaks and each part of the factory is held responsible. This has a remarkably wholesome effect on all concerned, stimulating them to care, skill and watchfulness.

As the material passes through the factory it is checked and counted like money. Between each two operations it passes through an inspection and counting department, who by weighing and counting keep track of the pieces and the scrap or waste.

*Time Schedules of Orders.*—It is of vital interest to the customer to get his goods promptly, or to know definitely when they will be delivered.

The Automatic Electric Company places every operation on a time schedule, arranging it so that all parts will be done by a certain date and the completed article ready for shipment. Each department is notified of the time when its work on a certain order shall begin and when it must be completed. If a foreman, on receiving his schedule, thinks that he can not finish the work in the time specified, he must at once say so,

giving reasons for delay. The case is immediately investigated and if reasonable cause be found the schedule is altered.

When an order is received it goes to an order clerk, who writes the order in accordance with factory forms. It then passes to the stock record clerk, who analyzes it into its component parts and notes the materials required. If any stock is "short" he finds out why it was allowed to run so low and sees to its replenishment. If the stock necessary is on hand, the "master order" goes to the schedule department. Those in this department arrange the schedule for the whole order and have charge of it until completed. They send to each department a separate order for each individual part or operation, accompanied by the older time schedule, and simultaneously order the necessary amount of raw or other material sent to that department.

*Automatic Machinery.*—The Automatic Electric Company is a firm believer in the real value of labor-saving machinery. Automatic screw machines of almost human action cut the screws and bolts out of solid rods. Drill presses in which many holes may be drilled at once, shorten the labor of that operation. There is a large number of punch-presses of varied and wonderful ability, producing some very interesting feats in the art of drawing metal.

All the blue prints are made by an electric printing frame employing an arc lamp. Automatic mechanism times the exposure.

It is highly essential that a manufacturing concern shall know what its operations are actually costing. As a check on past performance and as a basis for future calculations every modern house employs a more or less general system of cost records. The Automatic Electric Company has been successful in securing very satisfactory data by the use of automatic machinery.

A mechanical copy of each time ticket is made by punching holes in a card indicating the digits of each number. These cards are next put through a wonderful machine which automatically sorts the cards (350 per minute) in accordance with any of the numbers desired. For instance, from the cards for a whole week one can, by the sorting machine, get together all the time tickets which relate to a given order, piece or operation.

After sorting, the cards are passed through an electrical adding machine, which automatically adds four columns at once, turning out 250 cards per minute. This gives total costs, hours, etc.

Both these machines require only cheap labor to operate, but yield work of high accuracy. Their installation has opened avenues of cost information and details of performance which were before unavailable on account of the cost.

An adding machine is placed in every office which needs it, for experience has shown the economy of accurate work.

The correspondence of customers is systematically distributed to the departments with the care of a U. S. post office and stamped with the time of receipt.

A complete 100 station automatic telephone system connects all departments.

*The Product.*—The Automatic Electric Company produces the following apparatus:

1. Automatic switchboards and telephones.
2. Semi-automatic district sub-office for extensions to manual plants.
3. The automatic traffic distributer for manual boards.
4. Accessory manual apparatus, such as toll boards, wire chief's desks and other equipment for automatic exchanges.

The first of these is naturally the point of chief interest, from which the others have come as incidental. The basis of the system is the familiar type switch, with its curved bank of contacts, its vertical wiper shaft, and the relays and magnets which control its motions. When made as selector it selects the group or sub-group of the exchange in which lies the desired number, and then automatically finds a non-busy trunk line to that group. As connector it seeks out the particular line itself, in the proper group, and rings the bell at the called station.

In the original installations one complete first selector was provided for each subscriber's line. This was a great waste, inasmuch as only ten per hundred would be likely to be in use at any one time. Hence the company produced the Keith line switch, an apparatus which allows one hundred subscribers to have access to ten first selectors. This greatly simplified the central office equipment and reduced the maintenance still lower.

The economic advantage of dividing an exchange area into several office districts has been realized for many years. But the economy expected from shorter subscribers' lines has not often materialized and service has not been improved by multi-office operation. Hence there has been a tendency to keep all the lines in one office as long as possible.

The invention of the Keith line switch opened a new and important development. The company's engineers have shown how small outlying groups of subscribers can be profitably served by a Keith unit and connected to the main office by as few lines as will carry the load, still retaining speed and reliability.

The advent of the common battery two-wire system has made a great improvement and simplification. It has stripped the sub-station of all but transmitter, receiver hook, bell, condenser, and a simple make and break calling device.

*The Semi-Automatic.*—In a similar way the Keith line switch has been applied to manual exchanges under the name of "semi-automatic district sub office." By its use the amount of cable in a manual exchange can be greatly reduced.

*The Traffic Distributer.*—The effect of irregularity of telephone traffic may be materially modified by the use of the Keith line switch between the main distributing frame and the switchboard. It is here termed the "Automatic Traffic Distributer," for with uniformity it distributes the calls to operators, who complete the connection in an ordinary multiple. It abolishes the answering plug and cord, and makes it unnecessary to reach over more than one position.

*Accessory Apparatus.*—The Automatic Electric Company also manufactures a line of toll boards, wire chief's, information and other desks to be used in connection with its automatic and semi-automatic systems.

Practically every piece of apparatus put out is made by the company on the premises. A high grade line of 4-party harmonic bells has been developed, and used with success on the automatic installations. For years the company has been making its own transmitter, which has been developed to a very satisfactory state.

This company was the first to perfect and put on the market a successful modern series receiver of simple structure. Its engineers designed a simple non-polarized electromagnet with the proper quality and form of iron to give good talking qualities. This, together with the simplified two-wire calling device, has reduced the automatic sub-station to a desirable simplicity.

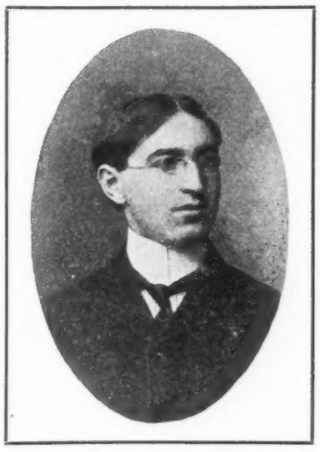
*In Conclusion.*—This, briefly, is the story of the automatic. There is a sequel, but that is to be read in the field of operation. Dozens of important cities have adopted it—many famous installations such as Grand Rapids, Los Angeles, and San Francisco. The province of Alberta, Canada, after exhaustive examination of various systems, adopted the automatic officially and installed it in its important cities. The entire island of Cuba is to be covered with the automatic system and the Havana exchange is now being installed.

From Maine to California and from the Old World to the isles of the sea automatic exchanges are daily giving service to hundreds of thousands of people. Andrew Carnegie uses it in Skibo Castle, Scotland, and even far away Honolulu is going to have the "dial telephone."

# The Vote-Berger Company

For ten years the Vote-Berger Company, of La Crosse, Wis., has been steadily forging ahead, with high ambitions to put before the Independent operating field apparatus which should in itself inspire the same confidence which the company's fair business dealings tend to create. The company has reaped its due reward in a steadily growing trade.

About a year ago the Vote-Berger Company put on the market its new magneto telephone, Style No. 26. In this telephone the switch hook, induction coil, receiver, lightning arrester, condenser and all the wiring are mounted on an "L" shaped removable shelf, which can be entirely removed from the cabinet for purposes of inspection and repair. This feature, in addition to other special features, such as the use of patent ringer connections, avoiding the necessity of unsoldering when changing ringer coils; placing the generator in the bottom of the cabinet where it is easily removed, and leaving no wiring on the back of the cabinet, has made this telephone very popular with operating men throughout the country.



Mr. M. I. Berger.

A new feature in hand generator construction recently adopted by the Vote-Berger Company is worthy of note. The armature contact pin is composed of a single piece of Bessemer steel fitted with a shoulder and head at the contact end, and driven into the hard rubber bushing in the armature shaft at such an angle as to allow the pin to come out the side of the shaft one inch from the shaft's end. The pin is then bent at right angles to the shaft and the armature winding is soldered directly thereto, thus avoiding the liability of poor connections experienced under the old method of drilling and tapping the pin for the insertion of a smaller pin with threaded end.

All "V-B" generators are now equipped with brass studded pole pieces, assuring perfect alignment of the bearings and permitting the reduction of the air gap, thereby increasing the voltage and amperage of the generator.

The company has recently developed a new type of common battery board for private branch exchanges—the No. 24 P. B. X. This switchboard consists of a handsome paneled oak turret, designed to be mounted on an ordinary table or flat top desk. All the equipment is mounted in the turret, the sides, back and top of which are removable, making it very accessible. When desired, this type of board is furnished complete with table or desk to match; or the turret is furnished alone, finished to match any hotel or office fixtures, and templates are furnished for cutting the shelf recess in the top of an ordinary desk or table.

The "pendent telephone," for common battery systems, manufactured exclusively by the Vote-Berger Company, has been entirely re-designed, the induction coil being mounted in the micro-handphone, which is easily disassembled. The ceiling

Vote-Berger P. B. X. Board.

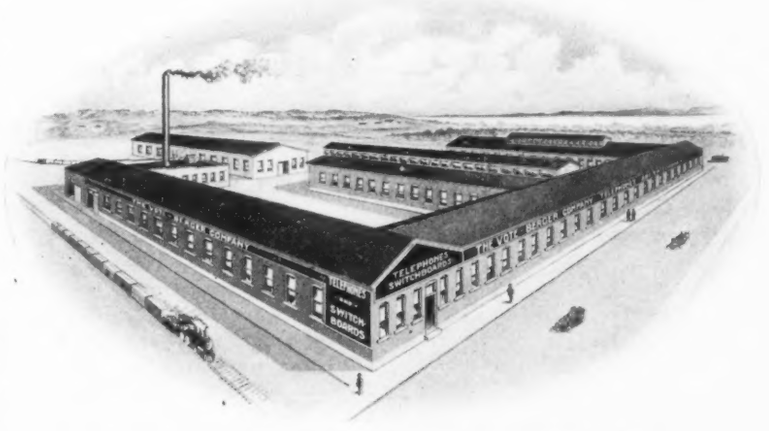
block consists of a handsome oak terminal block with a porcelain pulley mounted thereon. No adjustable parts are on the ceiling, the company now furnishing a standard 1,000 ohm desk set ringer box with the common battery "pendent," which can be mounted in any convenient place on the wall or desk. The Vote-Berger Company has recently gotten out a handsome little booklet in two colors describing the "pendent" telephone.

Mr. M. I. Berger, of this company, is the member of the firm who most frequently comes in contact with Independent operating men, and is known not only for his success as a manufacturer, but for his rigid Independent principles.

The company will have a comprehensive exhibit at the International Convention, where many of its pieces of apparatus of particular interest to managers at this time will be in evidence

### Promotions in Westinghouse Organization.

Mr. S. L. Nicholson has recently been appointed general sales manager of the Westinghouse Electric & Manufacturing Company, and has direct charge over the sales policies of the entire company.



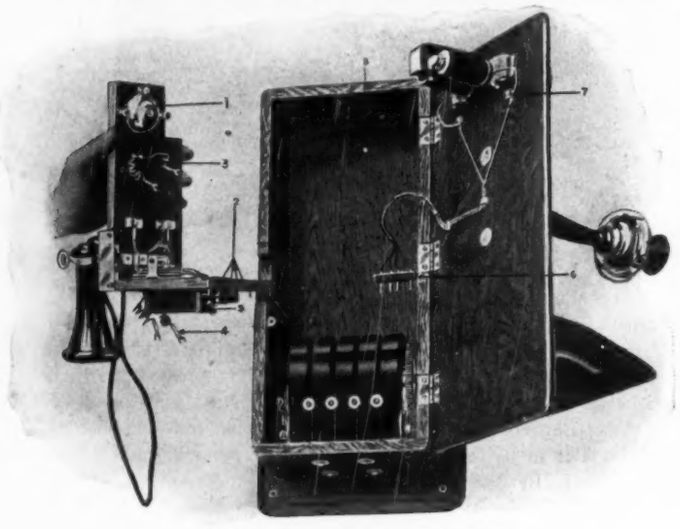

Vote-Berger Factory, La Crosse, Wis.

Mr. Nicholson has been with the company for eleven years in many different capacities, as salesman, as district

department manager, and as industrial and power sales manager for the past five years, from which last position he resigned to take the present post. Before coming to the Westinghouse company he was with the C. & C. Electric Company. He is perhaps best known to motor manufacturers as the organizer and president of the American Association of Motor Manufacturers, an organization which has done much in the two short years of its life to improve the art of manufacturing motors.

Mr. Charles Robbins, who has for many years been connected with the Westinghouse Electric & Manufacturing Company in the industrial and power sales department in connection with the sale of industrial motors, has recently been appointed manager of this department.

Mr. Robbins has been with the company since 1899, in which time he has been in the manufacturing department,



Vote-Berger Magneto Telephone.

the New York district office sales department and for the past three years in the industrial and power sales department at East Pittsburg. His headquarters will continue to be at East Pittsburg.

Mr. G. Brewer Griffin has recently been appointed manager and actively is directing the sales policy of the detail and supply sales department of the Westinghouse Electric & Manufacturing Company, in which department transformers, meters, fans, heating appliances, switches, switchboards, railway line material, etc., are sold.

Mr. Griffin has been assistant manager of this sales department for six years past, having previously been connected with the sale of detail apparatus in the Boston office, altogether having been employed some seven years with this company. Previous to his connection with the Westinghouse company, Mr. Griffin was with the Manhattan General Construction Company, of New York, as a special representative, finally opening an office for it in Boston.

Mr. Samuel A. Chase, who for the past few years has been with the Westinghouse Electric & Manufacturing Company in its New York sales office as a special detail and supply salesman, has recently resigned to accept a position with the White Investing Company, of New York City, a financial investment company handling stock of many different organizations.

Previous to Mr. Chase's employment with the Westinghouse Electric & Manufacturing Company, he was a salesman for the Western Electric Company, where he was highly successful.

Mr. Chase will, after January 1, be in charge of the Chicago office of the White Investing Company, having exclusive territorial rights in North and South Dakota, Minneapolis, Iowa, Illinois and northern Indiana.

### New Owners Receive Dividend on Columbus Citizens Stock.

At a meeting of the board of directors of the Columbus Citizens Telephone Company, the first since the control of the corporation passed to the new owners, the regular quarterly dividend of 1¼ per cent was declared on the common stock of the company, payable December 2d. The dividend amounts to $9,275, a greater part of which will go to the new owners, whose identity is unknown to Ohio Independents. The board elected F. A. Huntington, vice-president of the Huntington National Bank, a director in the place of David C. Beggs, who retires from the board. Mr. Huntington, who made the deal for the purchase of the company, will represent the new owners on the board.

It was announced that the new branch exchange recently erected at Hawthorne avenue which will furnish service east of Champion avenue, is now being cut over. The company is taking on a large number of new subscribers in that territory. The other branch exchanges in process of construction on Oakwood avenue, at Blake and High streets at Moler and Pearl streets and at Arlington, will be placed in service in a very short time.

### Springfield and Xenia Telephone Company Refuses to Get Under Brailey's Wing.

Announcement has been made at Springfield, Ohio, that options have been sought on a considerable quantity of stock by Delos O'Dell, acting for a Toledo bank. It is understood that the shares were to be turned over to Thomas H. Tracy, who was understood to be acting for parties associated with James S. Brailey, Jr., in other deals of like character which have recenly taken place. Latest reports say that the deal was turned down by local stockholders, and the offer is withdrawn.

### Home Telephone Co. of Ft. Wayne a Staunch Independent.

The security of an Independent property, well fortified by long-distance lines, and distributed local ownership of stock, is illustrated by the position of the Home Telephone & Telegraph Company of Ft. Wayne, Ind. Referring to the company's record General Manager W. L. Moellering recently said: "The Home company entered the field in 1896, practically without any long-distance lines, with all adjacent and distant territory in the control of the Bell company, with very limited facilities to obtain equipment. Fort Wayne then had 527 telephones, the rural districts none; in fact, all of Allen county did not have over 550.

"The Home company, composed of forty Fort Wayne citizens, fought hard and grew. In Fort Wayne and Allen county county it has grown to over 6,000 telephones. Its patrons can reach 200,000 other telephones. It did not minimize possible future danger, but constantly improved and enlarged its scope and services. Each year added long-distance lines through purchase and by building, and it now owns over 1,000 miles of line it bought and built outside of exchanges. It encouraged and aided the building of exchanges and lines of others in every village and town tributary to Fort Wayne. Contracts running over a long term of years were entered into with other large Independent companies in Indiana, Ohio and Michigan for the interchange of long-distance service. These contracts insure connection regardless of the future ownership of connecting lines.

"The policy of the company has been not to scatter its efforts or its capital, but to centralize as much as possible and thoroughly build up the territory it occupies. The original forty stockholders have grown to 400—all local people: bankers, merchants, professional and railroad men, farmers and others. The distribution of stock among many is also an element of strength."

# The American Electric Telephone Company

One of the oldest Independent telephone factories in the United States, the American Electric Telephone Company, was founded by P. C. Burns at Kokomo, Ind., in the early part of 1894.

At this early period it required a great deal of courage and an unbounded confidence in the ultimate outcome of the industry which was clearly shown to exist in Mr. Burns by his indefatigable labor and large investments which he made in the Independent enterprises.

In those tempestuous days, when it was difficult to obtain talent and labor familiar with the technical and practical part of the business, and when capital was so difficult to obtain for investment owing to intimidating threats employed by the Bell company with a view of frightening prospective inventors, Mr. Burns stood almost alone as the conquering hero of an unequal battle that was waged fiercely on the one side by a monopoly backed by enormous resources, with access to every subterfuge and trick known to the monopolist, against perseverance, energy, skill and a sense of the rights of the people and justice in the cause, on the side of the Independents.

Justice finally prevailed and the victories won by the Independents, partly through the efforts of Mr. Burns, have reached to the very foundation of commercial and social life throughout the country.

Quick to realize the advantages offered by the large and

Factory of the American Electric Telephone Company, State and 64th Sts., Chicago.

growing city of Chicago for the manufacturing business, Mr. Burns moved his factory to Chicago in 1897, and then incorporated the American Electric Telephone Company under the laws of Illinois.

During this year the American Electric Telephone Company purchased the entire business of the Northwestern Telephone Company of Milwaukee and merged it with its factory, increasing its facilities for turning out work.

The following year, 1898, Mr. Burns purchased and moved to Chicago the Keystone Telephone Manufacturing Company of Pittsburg, Pa., which had been organized in 1895, and with these combined institutions working under the direction of such an able head, the business grew and prospered.

With the Keystone company there came into the executive staff of the American company Mr. J. G. Ihmsen, former manager of the Keystone plant, who was made general manager of the entire plant, now grown to such proportions that it required a broad and firm administration based upon fighting qualities that were to be always aggressive in the advance, and a disposition and character that should know no defeat, and have never a thought of a retreat or a truce with the monopoly, that was by this time persistently troubling and harassing the Independent telephone investors by unfair competition and legal persecution on patent matters.

Mr. Ihmsen possessed all of the qualifications required to combat such a condition, and has ably performed his duties in that direction.

In 1904 Mr. Ihmsen was elected secretary and assistant treasurer of the company, in addition to the office of general manager, and in 1906 was elected president of the Telephone Manu-

Mr. P. C. Burns.

facturers' Association of America, all of which offices he still holds, and administers with great energy.

There has been hardly an important Independent telephone conference held in the past fifteen years that has not been attended by either Mr. Burns or Mr. Ihmsen, who have contributed their services and donated financially to alliances both offensive and defensive, that have appeared from time to time to be necessary for the protection of the Independent field.

In the year 1909 the American company further enlarged its scope by purchasing and merging the Victor Telephone Manufacturing Company, which was at that time prominently in the field.

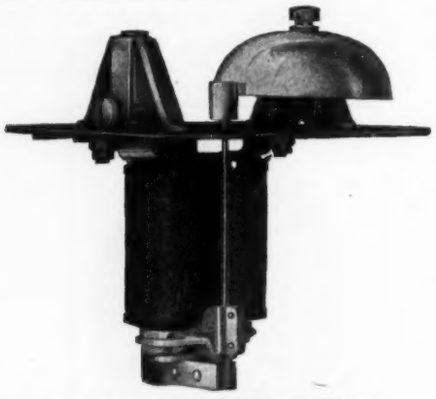
Having outgrown its facilities for manufacturing the switchboards and telephones required to fill the demand of its increas-

Mr. J. G. Ihmsen.

ing business, the American company, in the spring of 1905, purchased a valuable tract of land in Chicago at State and 64th streets, and erected a magnificent modern factory, which embraces all of the latest improvements in construction, and

houses nothing but modern machinery and special tools designed to facilitate the manufacture of its product.

In the development and production of its line of equipment, Mr. H. P. Clausen, chief engineer for the American company, is deserving of special mention.



American Four-Frequency Ringer.

A close student of the requirements of Independent telephone exchanges from an operating standpoint, possessing knowledge obtained through a thorough study and constant application to the details of equipment, and a broad intimacy with the trunking necessities of large installations, together with an experience in the electrical field that few are able to boast of, especially fits Mr. Clausen for the responsible position of chief engineer for this vast enterprise.

The employes of the American company in every department are most courteous and polite, and this happy faculty seems to be natural with them, so that the operations of the company are conducted without friction and in the pleasantest manner.

This company has been manufacturing common battery switchboards since 1899, and has to its credit several hundred successful installations of up-to-date Independent plants—space does not permit a list of the cut-off relay and impedance coil systems installed.

The apparatus for this purpose has been improved from time to time, and has kept up thoroughly with the advances in the art. American plants are dividend payers; are hard plants for the Bell to meet in competition.

American No. 48 Pressed Steel Common Battery Telephone.

This company is a pioneer manufacturer of frequency signaling telephone apparatus, its development along that line having seen practical evidence in telephone exchange work since 1899; it has, therefore, a large and long experience. Some of the claims for its frequency ringers are briefly stated as follows: Some people call this class of equipment "harmonic," which is erroneous, in that it is not a true harmonic system. The American company uses as a standard for 4 and 8 party work, 16, 33, 50 and 66 cycle ringing currents, without ground connection.

The ringer is exceptionally rigid. The ringer core consists of hollow iron tube, specially treated. The frame itself has a solid core. When the hollow core with the winding on it is slipped over the solid core, the mounting frame is bolted fast. The hollow core reduces impedance to the ringing current, but increases the impedance to the higher frequency telephone current, hence giving a more efficient ringer.

American Magneto Telephone, No. 360, with Removable Shelf.

The tuning reed is clamped to the supporting frame in such a way that no sharp corners lie in contact with the reed. The tuning reed is straight. Through the peculiar efficiency of the ringer a tapper rod is used of only one-half the weight of that found on other makes.

The fact that this ringer can be mounted and adjusted afterwards in its true operating position is to be particularly noted, because of the fact the ringer is furnished with outside micrometer gong adjustment screws.

This ringer is so made that coils can be changed without the disassembling of the entire ringer. The interchangeable coil feature is of value.

The American 4-frequency ringing apparatus is made complete for magneto work by development of an exceptional generator, so designed as to give the maximum voltage by the slowest possible turning of the crank handle. This is one of the latest developments, and will be shown in detail at the Con-tion.

The tendency to abandon the use of wood in common battery telephone instrument construction has found acceptance

with this company through the working out by its engineering department of a pressed steel wall telephone, neat, compact, "indestructible" and substantial.

It should immediately be noted in the fact that this instrument is pressed out of steel of sufficient thickness to make it absolutely rigid. This is a rare quality in telephones built on these lines. It is strong as a cast iron box, but not breakable.

The telephone is made in three pieces, hinged so that all of the operating parts are immediately open for inspection from both front and back, by the removal of one screw. The condenser can be removed without taking the telephone from the wall. Lugs are provided on the base of sufficient area so as not to mar the plaster. The gongs are mounted on stands which are adjustable by means of a micrometer screw, accessible from the outside of case. This instrument is provided with substantial terminal blocks and with removable lever hook. All parts are "American Quality" common battery apparatus.

The American Electric Telephone Company has always been known as a pioneer, not only in the length of time during which it has manufactured, but in the developing of new ideas and apparatus. An illustration of this fact is shown in what is known as the standard compact type magneto telephone which was first introduced by it many years ago.

Following this practice, and as the result of over a year's careful development in the engineering department, it placed on the market, in May, 1908, the "No. 360 Magneto" wall telephone, which was soon noteworthy as to size, and also as to the clever arrangement of parts, as the views indicate.

The instrument is, of course, equipped with the standard "American Quality" parts, but the particular feature which will appeal to every practical telephone man at once is the ease with which the operating parts which are subject to inspection from time to time can be removed from the telephone, practically in one unit.

With the exception of the transmitter and ringer, all of the parts are on one shelf held by two substantial screws, but almost instantly removable. There is no wiring on the back of the cabinet; only two wires on the inside from the line terminals to this shelf. The induction coil is likewise easily removable without unsoldering any connections, through the use of two Fahnestock terminals, as shown.

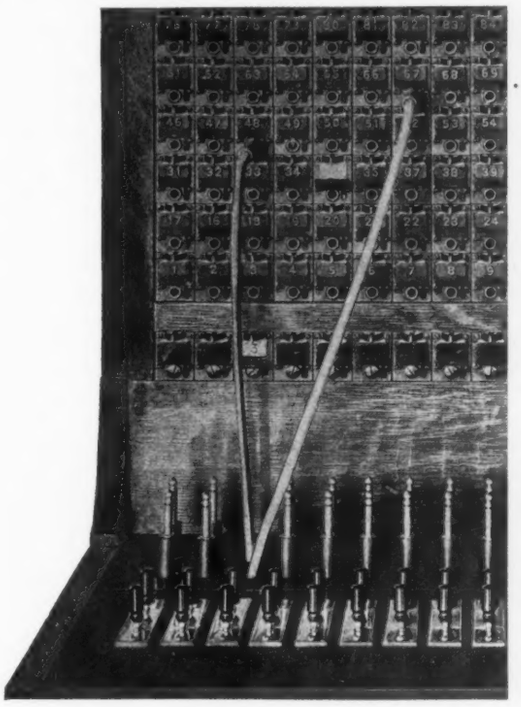
These instruments are furnished with either flat or round magnet generators, as the customer may require, and with any combination of parts to meet the customer's requirements.

Burns' Adjustable Telephone.

As a fitting companion to the "No. 48 pressed steel" common battery telephone set and "No. 360 magneto" wall telephone, this company offers the "No. 43 desk" telephone, shown somewhat in detail here, and used by some of the largest exchanges. One company uses 20,000.

The desk stand is coming into greater use all the time. Large exchanges state they are now installing 30 desk to one wall instrument, hence the necessity of securing an instrument which will keep maintenance cost at a minimum.

The point of special interest to the telephone buyer lies in the fact that all of the parts are exceptionally heavy. All of the cords connect on a terminal block in the base; none enter the stem. The stem is self-contained; the base is self-contained;



Face Equipment and Key Shelf of No. 45 Switchboard. Partial View.

a screw holds them together. There are no removable parts connecting the stem and base. The induction coil is in the base, permitting the use of two conductors in the connecting cords.

The same substantial characteristics that apply to the No. 43

Construction of the American No. 43 Desk Stand.

desk stand also apply to the "Burns adjustable telephone," illustrated herewith. This is a combination of the desk stand without the base and the "Burns adjustable bracket," of which there

has been such an enormous sale, and with which almost every telephone man is familiar.

The manufacturers believe the time will come when this type of desk stand will practically supersede the older style, because the maintenance expense is so much less and the cost of the combined telephone and bracket a considerable saving over the cost of the two separate articles. There are no springs or other delicate parts in the bracket to need adjusting or wear out.

The same advantages apply to the "Burns adjustable bracket," of which there have been a large number sold. It is made for holding one or two telephones, and with various style clamps for the holding of any type of desk stand on the market. This bracket is also provided with various mountings for flat or roll top desk, wall or table, etc.

The "No. 45 Burns' express" magneto switchboard has been widely mentioned because of its many unique and advantageous features. This board was first offered some fifteen months ago, since which time several hundred boards have been furnished in various sizes, with uniformly satisfactory results.

In purchasing such apparatus from this company the customer feels that no risk is taken because this No. 45 drop and jack is the result of an experience in the making of over 400,000 magneto drops of the unit type construction.

Extreme simplicity is evident in this drop and each operation is performed in a direct, positive manner. The manufacturer makes the statement that there are only 36 parts, counting every screw and washer, in the No. 45 drop and jack, There are 45 reasons given by this company why the No. 45 drop and jack should be preferred by customers.

Quick to realize the value of the Mansbridge self-sealing condenser, the American Electric Telephone Company secured United States rights to this valuable invention some time since, and by the installation of a most complete condenser plant has been able to develop and furnish to its growing trade a condenser having unique features.

One of the many striking features is that the paper, specially imported from Europe, has the foil directly on the interleaving paper. Thus the requisite capacity may be secured in a small space, and by proper interleavings a high break-down test is guaranteed.

American condensers are manufactured by what is known as the "vacuum process" in distinction from the "hot air process," as used practically by all other manufacturers. Through this process every particle of air and moisture is drawn out of the condenser and then, under high pressure, the hot paraffin is forced into every interstice. These condensers are made in all sizes for special and standard work and are used extensively by the United States government, telegraph companies and automobile manufacturers, as well as telephone companies.

The apparatus illustrated and described on these pages comprises only a few of the many features which will be shown at the International Independent Telephone Convention at the Auditorium hotel, December 7 to 9 inclusive. Parlor 126, on the first floor above the office, convenient to all, will be open house for the "American's" hundreds of friends in attendance at the Convention. Strangers will be welcome and arrangements provided for the entertaining of all at the State and 64th street plant.

### State of Ohio Wants No Telephone Monopoly.

Attorney General Denman of Ohio will file suit to invalidate the sales of the Independent telephone companies, should it develop that the Bell interests are the real purchasers of the properties. He made that announcement recently after reading a telegram from St. Louis saying that Samuel B. Jeffreys, an attorney of that city would ask the law department of the state of Missouri to stop the sale of any Independent companies to the syndicate which has bought a large number of the larger properties.

Mr. Jeffreys is very much interested in the sale of the United States, the Cuyahoga, and the Indianapolis companies, and also in the subsidiaries of the U. S. such as Massillon, Canton, Youngstown, etc. Attorney General Denman said he had been watching the sale of the Independents and is satisfied that if the Bell is the real purchaser he will have no trouble to maintain an action invalidating the sales under the Valentine anti-trust law.

Frank A. Davis, president of the Columbus Citizens Company, however, has said he is positive that the new owners of the company are not in any way identified with the Bell company.

### Moon Manufacturing Company.

One of the companies which stand high among the manufacturers of electrical supplies and telephone equipment in general is the Moon Manufacturing Company, Chicago, Ill., which was incorporated under the laws of Illinois in 1894. In 1896, which was the early days of Independent telephone manufacture, Mr. H. E. Procunier developed an idea for the better protection and termination of underground and aerial cables. He brought out and patented the Moon fuse terminal, which was quickly recognized as far in advance of anything then before the Independent telephone field for that purpose.

From time to time Mr. Procunier has made improvements in the terminal, as he has closely observed the requirements for cable protection during the years since his first patent was granted. He was perhaps the first to recognize the necessity of placing the fuse protection and simple means for testing the lines on the terminal head. The Moon self-soldering nozzle whereby an ordinary lineman can seal the cables in the terminal was another improvement.

The Moon apparatus for cable protection is now used not only in this country, but in many foreign countries.

The officers of the Moon Manufacturing Company are H. E. Procunier, president and manager; W. L. Procunier, secretary, and E. B. Procunier, treasurer.

The Kellogg Switchboard & Supply Company will be at room 648, Auditorium Hotel, December 7, 8, 9, during the Chicago convention. Delegates and all Independent telephone men who come to Chicago at any time are invided by the company to visit the factory and inspect its telephones in the making. This is the best exhibit it has.

The North Electric Company reports through its Kansas City branch that it has installed a 300 line magneto switchboard, equipped for 200 lines, for The Vandalia Union Switchboard Company, Vandalia, Mo.

### Chicago Subway Reorganized—May Affect Telephone System.

The Illinois Tunnel Company, which operates a partially developed telephone plant in Chicago, was placed in the hands of a receiver, on December 1, by Judge Kohlsaat, of the United States Circuit Court. It is understood that this proceeding is the result of a friendly action, made necessary by the present financial condition of the company, and that very soon a reorganization committee will enter upon the task of carrying to conclusion the tunnel and associated enterprises, including the telephone system.

The bills sets forth that the only way to safeguard the properties was to put them in the custody of the federal court to prevent a multiplicity of suits in various courts and consequent dismemberment or destruction.

The petition in the tunnel case goes on to say that the only practical way for the company to pay its indebtedness is to complete its tunnel and telephone systems at the earliest possible date—a work which is declared to be of vital importance to Chicago.

# Monarch Telephone Manufacturing Company

Just about the time this issue of TELEPHONY reaches you there is a steamer on its way from San Francisco to one of the most beautiful islands in the South Pacific Ocean—Tahiti.

About the middle of December (the beginning of summer in Tahiti) the steamer will enter the palm-bordered harbor of Papeete, and tie up at the wharves of that city, where it will unload the equipment for a modern telephone exchange.

Notwithstanding the fact that Tahiti is a French possession, purchasers of telephone equipment have looked to the manufacturers of the United States to provide the proper apparatus to withstand the severe climatic conditions of this South Sea island. The switchboard and telephones were manufactured by the Monarch Telephone Manufacturing Company of Chicago, and this order is only one of many now being received from foreign buyers of telephones. Up to a few years ago Sweden and Germany supplied the world, outside of Canada and our own country, with telephone apparatus, but American manufacturers are now entering the field and securing a large percentage of the business.

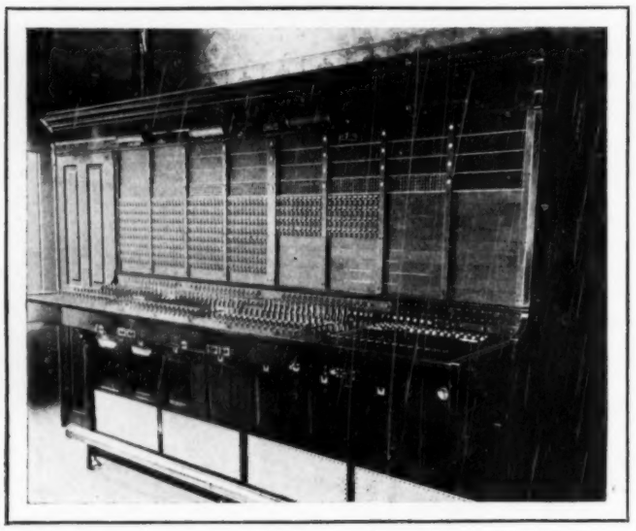
This Tahiti installation typifies the advancement made by the Monarch company. Organized by practical telephone men and operated along fair and conservative lines, it has won a place for itself in the manufacturing field, and today it stands high in the estimation of telephone buyers the world over. The original incorporators are still the owners of the company. Ernest E. Yaxley, the treasurer and general manager, has been identified with Independent telephone development since the very beginning of the Independent movement. It is to him that credit is due for the splendid design of Monarch apparatus. His reputation as a mechanical and electrical expert is so well known that it is hardly necessary to more than mention his ability along these lines. The equipment he has produced can always be recognized by its freedom from complications, and its general stability and high efficiency.

During the past year improvements have been perfected, and the line of Monarch products so completed, that it is possible for this company to furnish equipment for every exchange requirement. Space does not allow a complete story of the work accomplished, but a summary will give an idea of the time and care spent in development. A new and extremely efficient common battery telephone circuit, using a magnetless direct current receiver has been perfected and patented. An improvement of great importance has been made in the already successful four-party direct current selective system, and the system has been adapted to common battery as well as magneto lines. Mine and police telephones, lineman's test sets and steel box residence or hotel type telephones have been designed, manufactured and marketed. The Monarch transmitter, which for years has been giving unexcelled service, has been modified in form, but not changed in design. This modification simplifies manufacturing processes and gives a magnificent quality. The switchboard drop has been equipped with a platinum night bell contact. An intercommunicating system has been developed, and the apparatus perfected and manufactured. The switchboard drop has been equipped with a platinum night bell contact. An

Views in the Monarch Offices.

intercommunicating system has been developed, and the apparatus perfected and manufactured. The progress in building multiple switchboards has been noticeable, and a greater number than ever before has been sold and successfully installed.

In addition to this development in telephone apparatus and systems, Mr. Yaxley has worked hard and successfully on an



**Monarch Switchboard, Equipped with Magneto-Multiple Self-Restoring Drops, Suitable for Alteration to Common Battery.**

electric clock and time stamp system for use in connection with telephone exchanges. While the foundation of this system was laid almost two years ago, the last twelve months have seen the greatest amount of work done, and the system and apparatus are now complete. In bringing this work to a close Mr. Yaxley has materially added to the Monarch products, and has made it possible for telephone operating companies to extend their field of operation and thus increase their productiveness.

While careful designing is perhaps the most important factor to be considered by a manufacturer, the proper execution of design by the factory is just as necessary to success. The Monarch company is fortunate in having a man of Mr. Yaxley's capabilities as a principal stockholder and as a head to the creative department of the factory; but it is equally fortunate in having a second principal stockholder as the factory superintendent, to supervise the actual production of the apparatus. Julius C. Hubacher, vice-president and superintendent, has made a life study of factory methods, and it is largely owing to his knowledge of manufacturing processes and to his personal attention to the affairs of the factory that Monarch equipment shows the excellent workmanship for which it is noted. The machinery and tool equipment of the factory is wonderfully complete, but even with every possible facility it is necessary to untiringly watch the production of telephone apparatus. Mr. Hubacher being financially interested, and in full charge of the factory, handles this work as no mere employe could care for it.

The accompanying views of the factory give a general idea of the splendid facilities for producing Monarch apparatus. By making every part used in the finished product, there is small chance for mistakes. Automatic screw machines of the latest pattern, and equipped with a variety of special features, work day after day on screws, binding posts, bushings and other small parts. Milling machines, fitted with cutters made particularly for this class of work, accurately shape generator field pieces, key frames, etc. Large and small lathes transform pieces in the rough to finished parts, perfect in every detail. Furnaces with gas blasts heat steel and iron to a rosy red, and cold, running water then chills and hardens the steel, or crucibles buried in lime anneal the iron. Punch presses, set in rows, each with its huge fly-wheel, blank out and press into proper shape transmitter backs, receiver cups, jack frames, and hundreds of other essential parts of telephones and switchboards. Drill presses, with their adjustable tables and variety of spindles and drills, bore holes of all sizes from a mere pin prick to a half inch in diameter.

In every operation special tools are used: special fixtures for controlling the action of the automatic machines, cutters of peculiar shape for the milling machines, clamps to keep the parts from expanding in the heat of the furnaces, complicated and expensive punches and dies for blanking and forming parts in the punch presses, accurate drilling gigs with hardened steel bushings for the drill presses, and steel gauges at every machine to enable the employes to *know* whether or not a part is right. These special tools form one of the largest investments in the Monarch factory, costing more in dollars and cents than the whole machinery equipment. They are made in the Monarch tool room, by the best paid and best informed mechanics procurable. In this one section of the factory there is not the hustle and bustle noticeable elsewhere, but there is quiet, steady work done to produce the necessary equipment for the factory workmen.

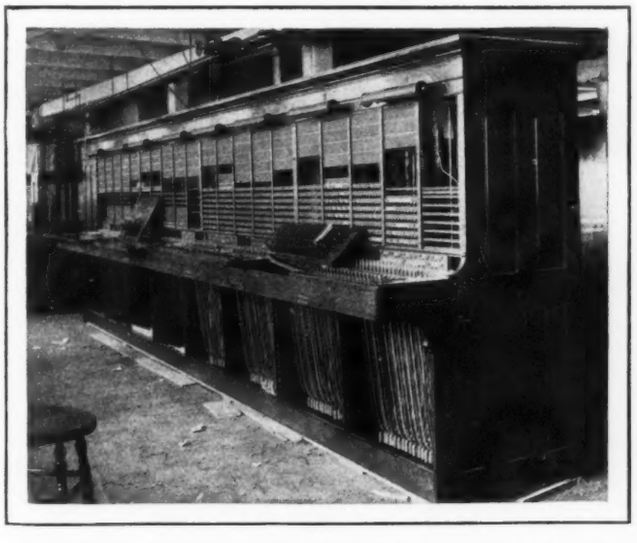
**Mr. E. E. Yaxley.** **Mr. Julius C. Hubacher.** **Mr. Walter H. Trimm.**

The Monarch factory is so situated that light is secured on all sides. Even the machine shop, with its shafts, belts and pulleys is entirely lighted by daylight. The assembling floors, two in number, are models of their kind. Wide, clean benches are placed to afford the best light, and plenty of room is left for the free movement of employes. While both floors are used economically, everything is in order, and the arrangement is such that a large amount of material can be under way at one time without the least confusion.

In the telephone assembling department the work starts, at one end of a long room, with the drilling of the cabinets. The backboards are then wired, the arresters mounted, the parts put in one after another, until the completed instruments are found at the other end of the room. Here they are tested on a testing board, wired and equipped to make every possible telephone test. All of the parts have been tested individually before they reached the telephone assembling department, but in this final test nothing is overlooked, as this last tester stands responsible for the telephones.

The switchboard assembling department occupies almost one entire floor. The drops and jacks, keys, relays, etc., are also assembled on this floor, but they pass through a testing room and a stock room before they are available for the switchboard department. From twenty to thirty switchboard sections can be worked upon to advantage. Large tables are provided for workmen forming cables, and hundreds of standard forms, made up of hard wood, with the forms of the cables outlined in nails and rings, are numbered and filed in racks ready for use. Gas stoves, with large ketties, for boiling cables in beeswax, and ovens for baking cables, occupy one end of the room. Spools of switchboard wire of all colors and combinations of colors are mounted on racks so that the wire can be run off easily and quickly. Portable testing sets are in almost constant use by the men wiring the boards. Blue prints of circuits, cable lay-outs, and details of construction are seen everywhere. With all the varied equipment of this department, perfect order and system are noticeable in every detail of the work.

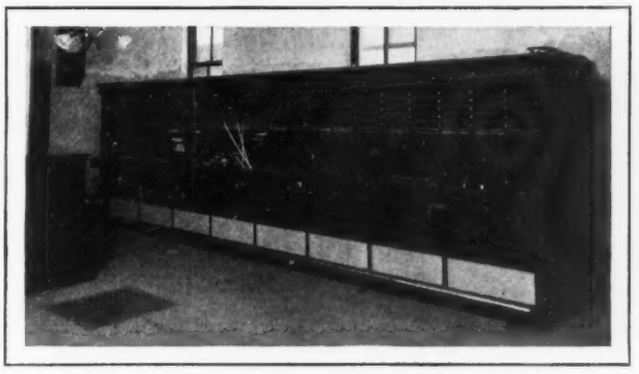
When switchboards and telephones have been subjected to the final test they are sent to the packing room, where men experienced in packing this class of apparatus prepare the goods for shipment. Printed forms bearing the numbers of the factory



Switchboard Sections Being Assembled in Monarch Factory.

orders accompany all goods delivered to the packing department, and the amounts and descriptions shown on these forms must agree with the goods received. After this check is made, and the goods are carefully boxed, the shipping department makes the cases and delivers them to the railroad companies. Sufficient space for rapid work, and experienced employes, have done much to maintain the Monarch company's reputation for prompt shipments.

A department closely associated with both Mr. Yaxley, as the designer of the apparatus and circuits, and Mr. Hubacher, as the superintendent of the factory, is the engineering depart-



Installation of Monarch Common Battery Switchboard.

ment. In addition to experimenting, drawing circuits and writing switchboard specifications for the factory, this department has charge of all blue prints and code numbers. Every little piece used in the manufacture of Monarch equipment has a code number, and is shown in every detail in a "shop catalogue." Hundreds of dollars have been spent in preparing the blue prints of which this catalogue is formed, but hundreds and thousands of dollars have been saved by making possible a system of stock keeping and stock ordering which is wonderfully complete and effective. The same comprehensive idea of system, and careful attention to little details, so noticeable in the Monarch factory, are to be seen in the offices of the company.

In dealing with the Monarch company a person is forcibly impressed with the attitude of that organization toward its customers. There is not the "distant" attitude which sometimes exists between a large organization and its customers, but rather a feeling of friendly co-operation. An inquiry, an order, or a communication of any kind sent to the Monarch company is handled in a way which shows that individual attention is given it by a person who knows how.

So strong has the feeling of friendship grown up between the Monarch company and its equipment that many of the improvements in Monarch apparatus have been the result of suggestions made by customers. The operating man dealing with the Monarch company feels he has an organization behind him capable of equipping him with the apparatus that he needs, built in the way that he would wish to have it built, and knows that he can get at all times fair treatment from the sales organization.

This spirit of co-operation between the Monarch company and the operating man has been instilled by Mr. Walter H. Trimm, who, as secretary of the company, is head of the sales department, and has been connected with the Independent telephone industry for the past fifteen years. Like Mr. Yaxley and Mr. Hubacher, Mr. Trimm is a stockholder in the Monarch company, and, therefore, is personally interested in its success. Mr. Trimm's influence has been such that operating men have come to look to the Monarch company for information and assistance, knowing that at all times they can get that which is intelligent and dependable. In Mr. Trimm's organization there is an absence of the red tape which so often separates the members of an organization from its customers. Mr. Trimm is at all times in direct personal touch with his customers, and, with the co-operation of Mr. Yaxley and Mr. Hubacher, has built up for the company a wide circle of friends.

No description of the Monarch company would be complete

without mentioning the perfect harmony which exists between the heads of the various departments.

Generally speaking, there are three distinct branches of the business: the originating or creative branch, under the direction of Mr. Yaxley; the productive branch, under Mr. Hubacher; and the selling branch, under Mr. Trimm. While the branches or divisions are clearly defined, and each man is in charge of the work he supervises, the fact that all these men are stockholders and owners of the company brings them together to confer with one another on subjects relating to their own individual work and to the general policies of the company. The president of the company, and one of its principal stockholders, Mr. John E. Norling, while not taking an active part in the business, gives invaluable help at the informal meetings held every few days, or as occasion demands them. Mr. Norling, with his wide experience as a business man, has done much to shape the policies of the company. The four stockholders work to one end. There is no friction, no working at cross purposes, no petty jealousy, but a unity of effort to make Monarch apparatus the best on the market, and to maintain the Monarch reputation for honest and fair dealing.

### All-Nebraska Directory of Independent Subscribers.

The value of an effective state organization in increasing the business of Independent telephone companies is exemplified in the directory of Independent telephone companies in eastern and central Nebraska, just issued under the auspices of the Nebraska Independent Telephone Association. The book carries, near the front, a map showing the close network of long-distance lines which connect several hundred Independent exchanges and toll stations. Then follow the subscribers' lists, by cities and towns, in alphabetical order, the name of the company operating the exchange appearing under the name of each town. A classified list of business firms appears in the back pages

The book carries, at the head and foot of each page, the advertisement of some prominent business firm having a trade covering the entire state.

There is every reason to believe that the issuing of this state directory will be one of the most effective aids to increasing long-distance business which can be devised, and the fact that it is placed at the disposal of members through the co-operation of the officers of the state association is another tribute to the well known effectiveness of the Nebraska organization.

### State of Missouri Starts Investigation of Telephone Mergers—May Oust Bell Companies.

Leroy B. Vallinant, of Jefferson City, Mo., Chief Justice of the Missouri Supreme Court, on Nov. 30 appointed Edwin Silver, of Jefferson City, special examiner to take testimony in an investigation which attorney general Ellis H. Major has instituted, to determine the legality of mergers of Bell and Independent telephone companies in the state.

This appointment follows the filing of a petition by attorney general Major, on Nov. 29, in which he alleges that the Bell companies are seeking or have already obtained the control of a number of companies that are now or have been Independent and competitive, and that the pool, trust, agreement, merger or whatever guise the absorption of the smaller companies may take, is in violation of the laws of the state.

The examiner is asked for so that testimony can be secured which may determine the character of the proceeding that will be brought, not only to prevent the absorptions and mergers, but to vacate the charters of the Missouri Bell and the Missouri and Kansas companies, both of which are corporations organized under the laws of Missouri.

LAW VIOLATION.

General Major says that any purchase or control on the part of the Bell system of these local companies is in violation of law. He estimates that full two-thirds of the telephone systems now in operation in the state are Independent. He says that competition is absolutely necessary in order to insure reasonable rates and adequate service.

The action instituted will put a stop to any merger plans that may now be under consideration, and place the attorney general in full possession of all the facts upon which to base ouster proceedings, should he determine to do as it is surmised he would do in view of the statement he gave out.

The attorney general's aim, as he states it, is as follows:

"The alleged contemplated merger of all the larger telephone companies of the country has been brought to my attention and I am at this time making personal investigation of the matter. I have been advised that the parties now in control of what is known as the 'Bell Telephone system' or more correctly speaking, the American Telephone and Telegraph Company, is now actively engaged in purchasing control of many large independent companies throughout the United States and are seeking control of the independent telephone situation in Missouri. Many communications from various parts of the state have reached this department protesting against such movement. Two telephone companies in Missouri of the Bell system are the Missouri and Kansas Telephone company, which operates in the western and northern parts of the state, and the Bell Telephone company of Missouri, operating in the eastern portion of the state.

"There is an apparent division of territory between these companies, as they connect with each other for long-distance business and do not interfere with each other in their respective territories. These companies have no connection with any of the many local Independent plants in the state except in such localities where they are without local plants. Both companies are incorporated under the laws of Missouri and a majority of the stock of each company is owned by the American Telephone company. The central operating plants of these two companies are located in St. Louis and Kansas City respectively.

"Within the past eight or ten years the territory served by these properties has been supplied with several hundred local Independent plants and the Bell system has had to compete with them for business. This has proven beneficial to the public in regulating telephone rates, much better, perhaps, than could have been secured by legislative enactment. Among the large Independent telephone plants in Missouri at this time are the Kinloch Telephone company of St. Louis, the Kansas City Home Telephone company at Kansas City, the Joplin Home Telephone company, of Joplin, etc. Any purchase or control of competing companies on the part of the Bell Telephone company is in violation of law. At least one-half of the telephones used by the people of the state are those furnished by the independent companies.

NEED OF COMPETITION.

"Competition is absolutely necessary in order to insure good and adequate service, and at the same time insure reasonable rates, thereby enabling the farmer, mechanic and laborer to enjoy the benefit and convenience of the telephone as well as those who are more able to pay for the same. The telephone business is of great service to the public, and such public service corporations are as amenable to the laws of Missouri as other corporations. The Bell system has acquired the Independent plants at Springfield, Kirksville, Carrollton, Mexico and Fulton, and I am informed has tried to obtain control of the Kansas City Home and the Kinloch.

"I have information that it has acquired the Independent plants at Des Moines, Iowa, Racine, Wis., Baltimore, Md., Rome, N. Y., and it is reported to have recently acquired the Independent plants at Cleveland, Toledo and Columbus, Ohio, and at Indianapolis, Ind.

"All those matters are receiving attention by this department and whatever steps the facts may warrant, will be taken to protect the public. Both the Missouri and Kansas Telephone Company and the Bell Telephone company of Missouri have the same president and the chairman of the executive committee of both companies is the same."

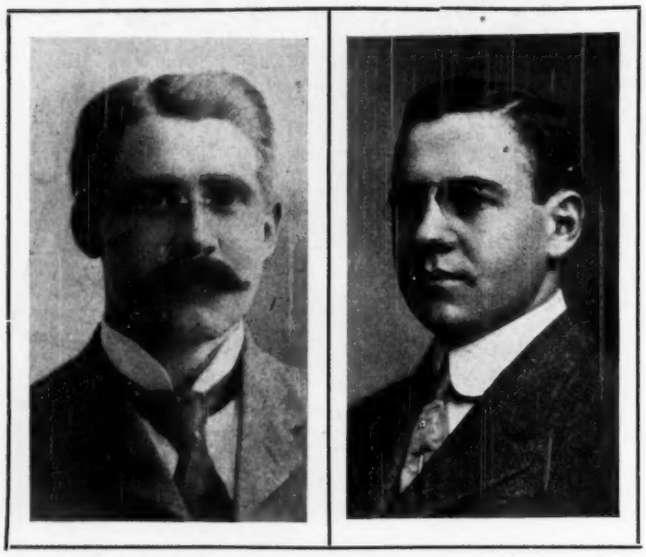
Work Going On in Different Parts of the Monarch Factory.

1—Portion of Tool Room. 2—Winding Room Detail. 3—From Generator Department. 4—Magneto Telephone Assembling. 5—Portion of Machine Room. 6—A Few Automatic Screw Machines.

# The Ericsson Company

The value and possibilities of the telephone as a public convenience and necessity were early realized by L. M. Ericsson.

In 1876 Mr. Ericsson started a small shop at Stockholm for making telegraph and other electrical instruments. Here he began experimenting with the telephone. The result of his experiments was the design of a transmitter and receiver entirely different from the old Blake transmitter then used by the Bell company. When Mr. H. T. Cedergren, who later became closely identified with Mr. Ericsson in the manufacture of telephones and switchboards, began the Stockholm Allmanna Telefonaktiebolag he used these Ericsson telephones in competition with the Bell company, then operating in Stockholm.



Mr. Klas. Weman. Mr. T. S. Hemenway.

Suits were immediately brought by the Bell company against Mr. Ericsson for patent infringement. These suits, however, were defeated and from that day the Ericsson factories have been steadily growing.

In 1884 there had been made 5,000 complete Ericsson telephones, and five years later, in 1889, the 20,000 mark was reached. At the present time the Stockholm factory employs about 1,500 men. The growth of the business has made it necessary to enlarge the facilities of the plant, and this year a new addition is being completed which will probably bring the total number of men employed up to 2,000.

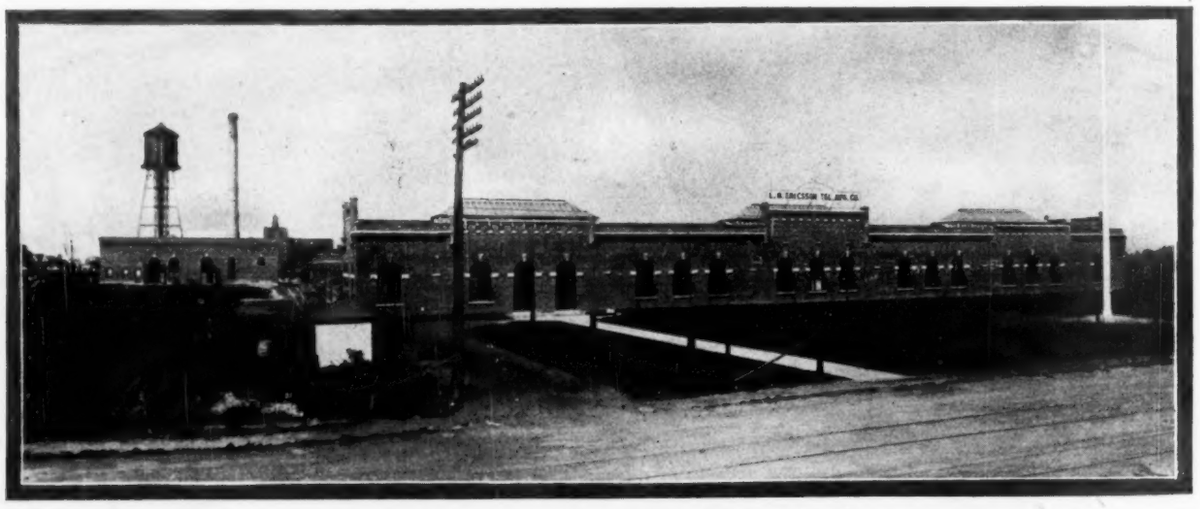
The product of the Stockholm factory has always been distributed over a wide area, which practically consists of the entire civilized world.

In order to meet the increasing demand for Ericsson products in Russia a branch factory was started in rented quarters in St. Petersburg, in 1897. The following year a very large, five-story brick factory building was built. The demand for Ericsson equipment grew rapidly, and this factory now employs about 650 men.

The large number of Ericsson instruments used in England resulted in the opening of a branch sales office in London, in 1898. It was soon found, however, that the Stockholm factory could not supply the increased demand and a large factory was purchased at Beeston, near Manchester, in 1903. The next year an extension to this factory was built. Two years later, in 1906, it was found necessary to add a large woodworking plant. The English factory at present employs between five and six hundred men.

Since the early nineties the Ericsson interests had been represented in the United States by agents, and in 1896 the Ericsson Telephone Co. was incorporated to act as agents for the Stockholm factory in the United States. The constantly increasing demand for Ericsson equipment was such that the establishment of a factory especially for the American trade was made imperative. Therefore in 1905 it was decided to build a factory in Buffalo, N. Y., and a large plot of ground was purchased. Here was erected the first building of the factory which now supplies Ericsson apparatus for both North and South America. The present building is designed along the most modern lines in factory construction. It consists of one story, with "saw tooth" roof construction, so that the maximum light is available in all parts of the factory. The present building has space for 600 men to work.

The Ericsson interests have built many of the largest exchanges in operation. The largest switchboard ever built by the Ericsson company, and in fact the largest board which up to the present time has ever been built, is the common battery switchboard recently installed in Stockholm, Sweden.



The Ericsson Factory at Buffalo, N. Y.

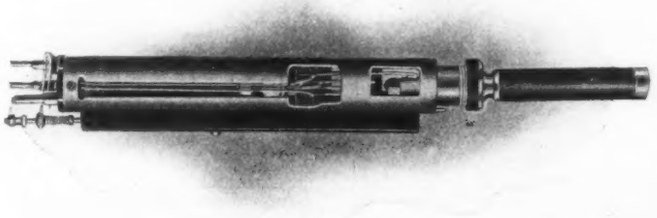
This board has a multiple capacity of 60,000 lines with a present installation of equipment for 34,000 lines. The system on which this board operates was devised by Mr. Cedergren, who has always been closely associated with the Ericsson in-

terests. His desire was to handle all calls from one exchange and be able to give the most rapid service possible. The operators are divided into two groups. One group of operators answers all incoming calls by trunking the call to an operator in the second group, who, she is informed by signals, is not busy at the instant the first operator answers the call. This is accomplished by simply inserting a plug ended trunk into the answering jack of the second operator, who asks the subscriber the number wanted. This operator then completes the connection through the multiple in the usual manner. Within reach of the latter operator is the multiple for the ultimate number of subscribers.

By means of this system only one of the two operators handling a call is equipped with a talking set. The first operator does not listen in on the line but simply transfers the call to one of the second operators.

This permits the number of operators on duty to be constantly kept at a minimum, because only sufficient operators are required to handle the calls actually being received. Thus during the busy hours of the day a full complement of operators will be necessary, but when the traffic decreases the operators may be relieved until the minimum number is reached. This is reported to result in a most economical and yet extremely rapid method of operation.

This method of operation has been very successfully employed in two Ericsson exchanges, in Moscow and Warsaw, Russia, where switchboards of the same nature, each having an ultimate capacity of 34,000 lines, have been in successful operation



Ericsson Indicator Jack.

for the past five years. Other switchboards of large size have been installed throughout the entire world. The City of Mexico, Valparaiso, Buenos Aires, Johannesburg, Capetown, Shanghai, Alexandria, Athens, The Hague, Copenhagen, and Paris are a few representative cities using Ericsson equipment.

The first complete all steel telephone for magneto purposes was designed by the L. M. Ericsson Telephone Manufacturing Company at Buffalo. The decision to build such a telephone was reached after much careful consideration of the problem. The constantly diminishing supply of wood for this purpose and its consequent increased cost were factors leading to this decision. A great deal of time was spent in designing this all steel telephone in order to build an instrument which would be graceful in design, thoroughly substantial, and rigid in construction, and which would provide in the smallest possible space sufficient room for all the necessary working parts. After the design had been carefully worked out, many months were spent in building and perfecting a complete set of dies and tools for manufacturing the steel telephones. The dies used for this purpose are models of the present die maker's art.

The Ericsson all steel telephone was placed upon the market over two years ago and has proved a success from the start. Its sale has been constantly increasing and it may now be found in all parts of the United States, and orders are constantly being sent to South America and, in large quantities, abroad, where they have met with particular success.

Ericsson products have always been known for the accuracy

The Ericsson Hand Micro as an Extension and a Main Set.

of workmanship entering into their construction, and for the nicety of design.

Perhaps the most characteristic piece of apparatus embodying these features is the Ericsson "Indicator jack." As a line signal for magneto exchanges the indicator jack is claimed to have many points of advantage. It is a combined jack and line signal, being arranged so that the jack and drop are in the same horizontal plane. The signal is thus longer than the usual self-restoring drop, but occupies only about half the space in the panel. The subscriber, calling in, operates a small trip device releasing a thimble or tube which jumps out in the face of the jack, corresponding to the fall of the shutter in the ordinary drop. The jumping out of this thimble attracts the attention of the operator. To answer the call the operator inserts the plug into this thimble, thus restoring it to its original position when the plug is properly seated.

The small space occupied by the indicator jack in the operating panel permits an operator to handle a much larger number

Hand Micro Set—A Convenient Instrument at the Desk or as an Extension Set.

of lines with the indicator jack than can be handled with the same ease and reach with the larger type of drop.

For magneto multiple switchboards the indicator jack is very satisfactory. On account of its small size, 160 lines per position can be provided, and the space occupied will be no greater than the space usually required by the answering panel in a

common battery board. Thus the extremely high multiple, which is one of the most undesirable features in a magneto multiple board, is entirely avoided, and the multiple jacks are placed within as easy reach of the operator as in a common battery board.

On the first examination of an indicator jack the casual observer is likely to criticise its compactness and the apparent fineness of its construction and adjustment, and to feel that in operation such a piece of apparatus would be constantly giving trouble. However, the several hundred thousand of these jacks which have now been in use for the past eleven years is conclusive evidence that this criticism is not well founded.

**The Ericsson Capsule Transmitter which May Be Readily Applied for Magneto or Common Battery by Installing a Proper Capsule.**

One of the early inventions of Mr. Ericsson was the type of telephone combining the transmitter and receiver, which has received the trade hand "hand-micro telephone." This type of instrument is manufactured in all the Ericsson factories, and wherever introduced has proven extremely popular on account of its many desirable features. There has recently been designed in the Buffalo factory and placed upon the market a set consisting of the hand-micro telephone with an induction coil in a neat pressed steel box for use as an extension set. The increasing use of extension telephones and the added rental which can be obtained from their installation has recently given a great stimulus to this type of instrument, and the hand-micro telephone admirably fulfills the requirements.

The uses of the hand-micro telephone, however, are not confined to service as an extension telephone, as in some locations it is much more convenient than the ordinary form of desk set on account of the freedom of movement which it gives to the user, and the fact that it does not necessitate a cramped position or the use of both hands to carry on the conversation comfortably. A booklet has recently been published by the L. M. Ericsson Telephone Manufacturing Company illustrating these telephones.

The company has just placed upon the market, and is exhibiting for the first time at the Chicago Convention, a new transmitter which is called the "Capsule" type. This has the same appearance and size as the ordinary "solid back" transmitter but is equipped with the well known Ericsson multicellular carbon chamber, with carbon diaphragm, which has always proven excellent in transmission qualities.

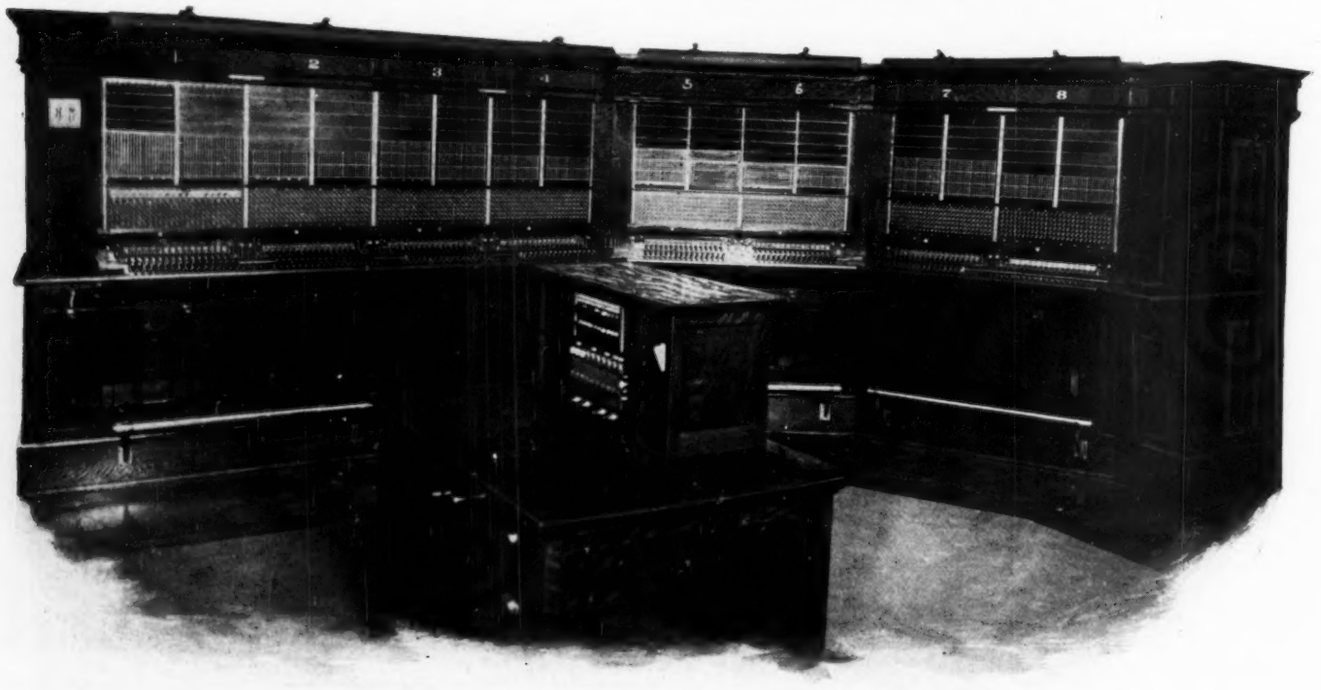
All essential parts of the transmitter are enclosed in a self-contained, sealed, moisture proof case, or "capsule." The capsule snaps into the outer cover and is held in place by two small knurled thumb screws. By removing the front of the transmitter and loosening these screws, the capsule can be quickly removed and replaced.

These transmitters can be attached to any standard arm by the usual method.

The capsule transmitter is an advanced idea and is simply an improvement in design which has the well-known efficiency of the Ericsson transmitter.

This transmitter can be changed from local to common battery without changing the complete transmitter. It is only necessary to change from a local battery capsule to a common battery capsule, and this can be accomplished by simply opening the front of the transmitter and exchanging the capsules.

The Ericsson "capsule" transmitter is not an experiment. Over fifty thousand of them have been manufactured by the



**Ericsson Switchboard—2,400 Line Capacity with Equipment of 1,000 Lines Installed, at Winchester, Ky.**

Stockholm factory, and the instruments have been in use for the past two years.

The present officers of the company are: H. Johansson, president; Carl H. Smith, vice-president, and T. S. Hemenway, secretary-treasurer.

Mr. Johansson has been associated with the Stockholm

Steel Enamel Finish Set—An Ericsson Leader.

Ericsson company for a great many years, and, until recently elected to the position of managing director, had been its chief engineer. He assumed charge of the company's interests as managing director upon the death of Mr. Bostrom, who had been managing director of the company since Mr. Ericsson gave up its active management.

During the entire period of developing the business of the American L. M. Ericsson Telephone Manufacturing Company, up to December 1, Mr. Klas Weman was in active charge as secretary-treasurer. Mr. Weman's ability as an organizer, and his skill as an engineer are well known to telephone men both abroad and in America, and his many friends are just now congratulating him upon his appointment to a high position in Europe, the duties of which he will undertake in a few weeks. His resignation from the L. M. Ericsson Telephone Manufacturing Company took effect on December 1.

Mr. Hemenway, whose progress with the organization has been steady, succeeds Mr. Weman as secretary and treasurer, and his high ideals and ability, as well as the familiarity with the Independent telephone interests which he has acquired in conducting the sales work, of which he has had charge, fit him to an exceptional degree for maintaining the Ericsson reputation on all work under his control.

### Continental Acquires American Union System.

By a deal consummated in New York City on Saturday, November 27, the entire property of the American Union Telephone Company was sold outright to the Continental Telephone & Telegraph Company, of New York.

The American Union Telephone Company, which has headquarters at Harrisburg, Pa., operates in about sixty of the sixty-seven counties of Pennsylvania, controlling practically all of the Independent toll lines in that state except those of the Keystone Telephone Company, operating in Philadelphia and immediate suburbs, and the Pittsburg & Allegheny Telephone Company, operating in Greater Pittsburg and Allegheny county and adjacent territory. The American Union, of course, has working agreements with both the Philadelphia and Pittsburg companies, and others.

The purchase of the American Union is perhaps the most important deal made by the Continental Company since its organization. The new acquisition will be added at once to the recent purchases of the Continental in New York and New Jersey.

The American Union was formed about four years ago with a capital stock of $25,000,000 authorized. It is a Pennsylvania corporation. It took over the old United Telephone & Telegraph Company, of Harrisburg, which had already absorbed the Independent lines throughout Central Pennsylvania. Since then the American Union has added to its holdings not only in Pennsylvania but in Southern New York, Maryland and West Virginia.

Of the authorized capital stock, $5,600,000 has been issued, $2,900,000 of which is preferred and $2,700,000 common stock. Bonds are outstanding at present in the sum of $11,000,000.

The officers of the American Union are John Graham, of Newville, Pa., president; Frank D. Houck, of Harrisburg, first vice president; Charles West, of Harrisburg, second vice president, and S. R. Caldwell, of Harrisburg, secretary and treasurer.

The plan of the Continental for the future is not known at Harrisburg, but no immediate change in the management of the business of the American Union will be made. The acquisition of the American Union is reported as an outright purchase and not merely an exchange of securities.

The Philadelphia Stock Exchange has heard many rumors during the past six weeks to the effect that the Keystone Telephone Company, of that city, had been or would be purchased by the Continental. That any such deal has been either executed or proposed has been officially denied by the officers of the Keystone, although it has been officially announced that a traffic agreement has been arranged between the Keystone and the Continental.

### Electric Company Sued for Inductive Disturbances in Colorado.

An injunction suit against the Eaton Electric Company of the town of Eaton, Colo., has been brought by the Colorado Telephone Company. Schuyler & Schuyler, of Denver, attorneys for the plaintiff, have brought action under a new law passed by the Colorado legislature of 1907, providing that transmission lines crossing the wires of another company shall be amply safeguarded by the company last upon the ground. The Eaton wires cross seventy-six lines belonging to the Colorado Telephone Company, and the latter maintains that it is a constant menace to life and property, and that the defendant has not made any effort to safeguard the lives of people in that vicinity.

### Ft. Wayne Campaign Against Business Service for Residence Telephones.

Contractors, carpenters, decorators and men in other similar occupations are preparing to fight the movement of the Home Telephone Company of Ft. Wayne, Ind., which plans to charge the business rate for service in their homes on the ground that the telephones are used for business, and therefore should be listed and charged for as business telephones.

The company is preparing to test the question in the courts.

# The Dean Electric Company

Possibly no modern manufacturing concern ever was started under more auspicious circumstances than the Dean Electric Company. The conditions were just right for success, and the country was alive with telephonic developments.

It was in December, 1903, that Mr. William W. Dean, of international fame as a telephone inventor, and A. E. Barker, sales expert, left Chicago for the bustling Ohio city of Elyria, which was to be their future home. The Dean Electric Company was immediately incorporated under the Ohio laws, and included in its directorship many men of importance in the operating field.

**A Portion of the Telephone Assembling Department of the Dean Electric Company. The Constituent Parts of the Telephones Enter This Room at One End and Emerge at the Other, Complete Instruments, Tested and Ready for Use. Every Facility Is Provided for the Highest Grade of Workmanship.**

Mr. Dean was assisted in his work of designing and engineering by R. H. Manson, S. A. Beyland, A. D. T. Libby and G. A. Scoville, all men of experience in designing and manufacturing telephone apparatus. A complete factory was built and telephone equipment made ready for the market in the summer of 1904. The advancement was so rapid that common battery multiple exchange equipments, with harmonic ringing, were installed by the first of 1905. The business grew by leaps and bounds, requiring repeated extensions and additions to the factory and the working force.

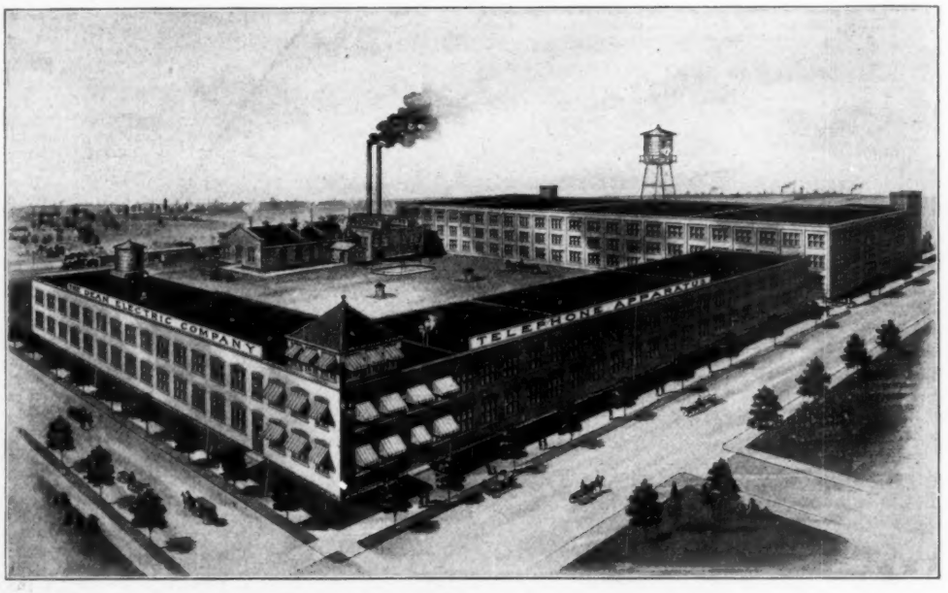
The building of such a successful and extensive manufacturing plant in a few years' time is possible only by having every department of the institution in the most experienced hands. No false moves can be tolerated, and every stroke must be productive. It is self-evident that the Dean force was made up of this kind of live material.

In 1906 the Dean company had outgrown everything, including its original incorporation papers, and a new and larger three and one-half million dollars, took over the business. St. Louis capital became interested in this new corporation, and sent as its representative Mr. A. G. Bean, who was appointed as treasurer, but virtually acted as general manager. It was through Mr. Bean's energy and ability as a business manager and financial man that it was made possible to operate the Dean factory, full force, throughout the period of the 1907 and 1908 "money stringency."

In 1908 the Elyria organization was further strengthened by the addition of Mr. J. F. Barbour, who took over the management of the shops. Mr. Barbour's experience in manufacturing started with an apprenticeship in New England factories, and just before coming to the Dean company he had charge of the telephone apparatus construction of the Chicago works of the Western Electric Company.

The Dean plant of today has a manufacturing floor space of over 150,000 square feet, and is located directly on the main line of the Lake Shore & Michigan Southern Railway with a land frontage of 1,200 feet. At the present time the entire factory is devoted to the making of telephone apparatus. In spite of the big facilities, overtime work has been necessary for some months past to keep up with customers' requirements.

Branch houses with complete stocks of telephones, small switchboards and other materials are maintained by the Dean Electric Company at Kansas City and San Francisco. This makes three distributing points which are especially well located to handle trade for the entire country from coast to coast.

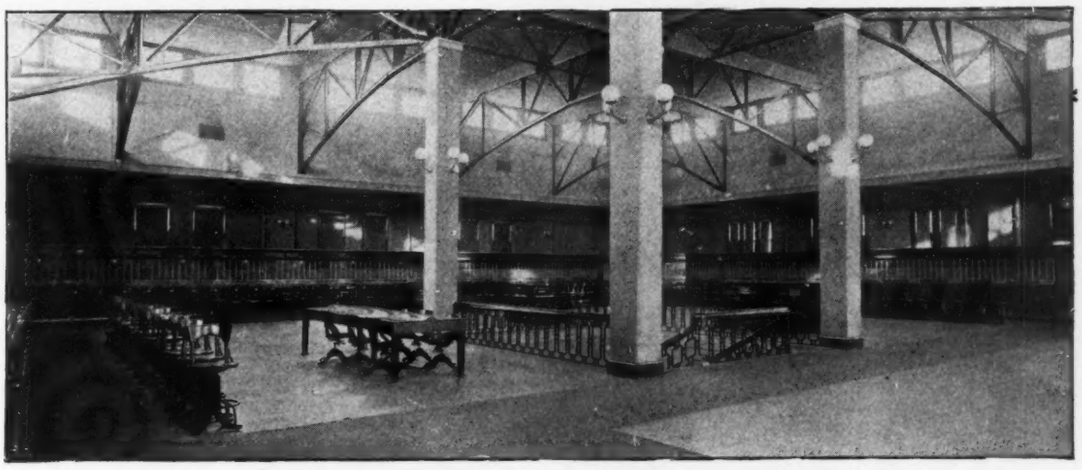



**Manufacturing Plant Owned and Operated by The Dean Electric Company at Elyria, Ohio. About 150,000 Square Feet of Floor Space Is Devoted to the Exclusive Manufacture of Telephone Apparatus. The Property Is Located on the Main Line of the L. S. & M. S. R. R., Giving Excellent Shipping Facilities.**

MAKING THE HARMONIC SYSTEM COMMERCIAL.

The most notable achievement of the Dean company was the development of its harmonic party line ringing system. From Elisha Gray's harmonic telegraph, made before the Cen-

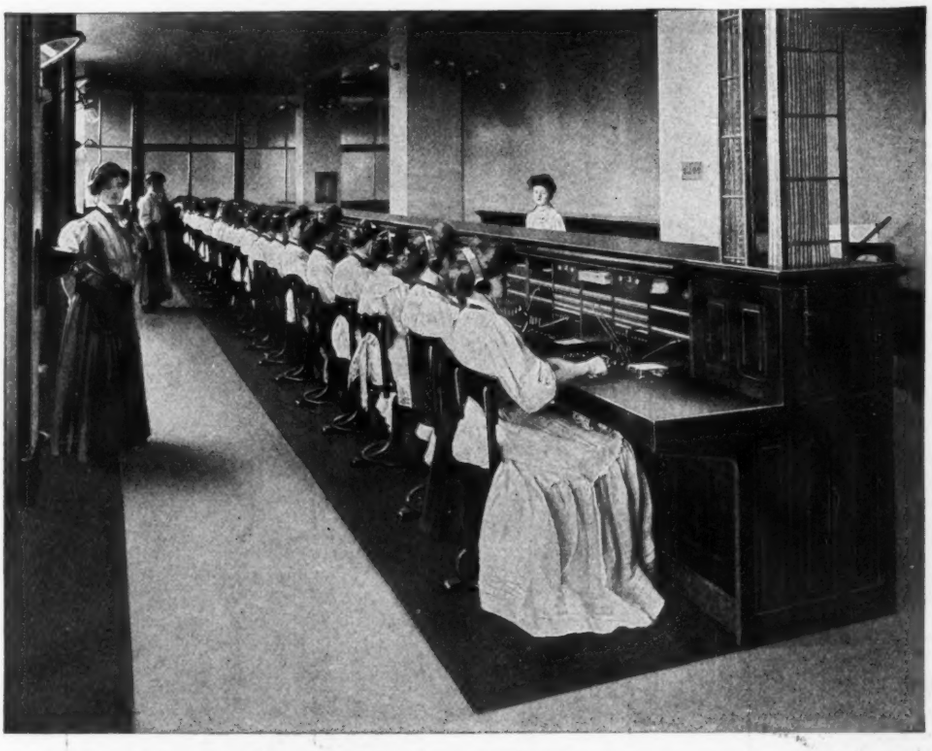
concern, still of Ohio parentage, with an authorized capital of tennial of 1876, to Mr. Dean's Kellogg single-gong ringer of 1903 was a simple step as compared with the results achieved in the Elyria factory in 1904 and 1905. The demand for a harmonic system had been created, but its limitations restricted mere developing of a ringer and a reliable means of producing the harmonic ringing current. Complete harmonic systems were produced for the small magneto exchanges, by making non-interfering telephones and designing the now popular "non-ring through, positive ring-off cord circuit." The latter with



**A Dean Main Exchange Equipment at Detroit, Mich. Other Large Up-to-Date Dean Exchanges Are at Lexington, Ky., Cleveland, O., and St. Joseph, Mo. The Latter Jobs Were Completed This Year.**

it to big exchanges and to special designs of telephone boxes, the latter to accommodate the large Kellogg single-gong ringer, popularly known as "The Fire Bell."

At Elyria was designed the first successful two-gong ringer which would go into a regular telephone and be interchangeable with the ordinary straight line bell. Then, to make it possible to use the harmonic in small exchanges, and in towns where no electric current circuit existed, a pole changer of four frequencies was perfected. The registered trade-mark name for this device is the "Harmonic Converter."



**A Modern Toll Board Installation Made by The Dean Company at Cleveland, Ohio. Two Later Toll Boards Have Been Installed at Detroit, Mich., and Lincoln, Neb. These Installations Include Apparatus for Simultaneous Telephone and Telegraph Purposes and Phantom Circuits.**

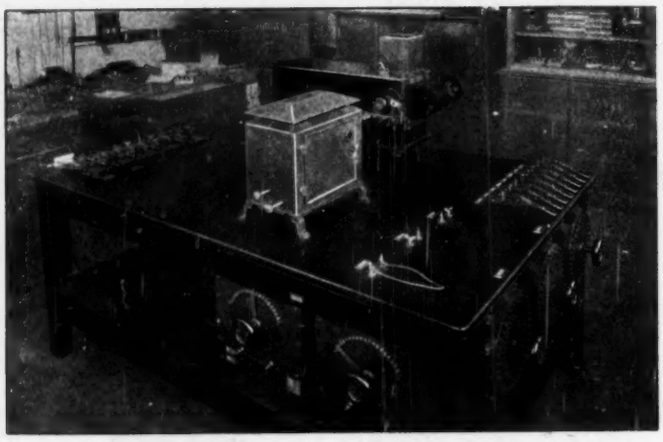
The success of the Dean company's harmonic system was instantaneous. But the Dean engineers did not stop at the a slight modification has worked out to advantage in regular exchange service where the harmonic is not used. It provides a double clearing out signal, keeps the ringing-off current from disturbing parties on a connected line, and above all, does away with the old tie-ups. Another important Elyria-made invention is the so-called "noise killer," which is used to prevent the harmonic converter from interfering with transmission when the system is operated from a central office main battery.

The Dean company has a big file of records showing wonderful results from the use of the harmonic system: How profits are made on low rentals, how increases of 250 per cent in the number of telephones has been made without adding material to the outside construction; how plants have grown without making expensive extensions to the central office equipment; and how the providing of a high-grade selective party line service has won out against strong competition.

A NEW TELEPHONE BY-PRODUCT.

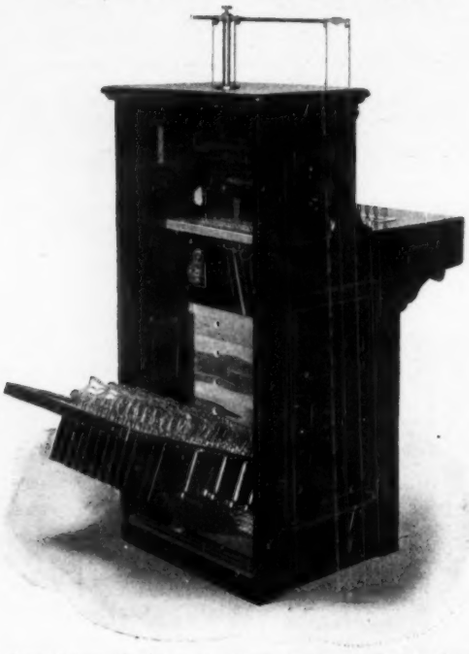
The by-products of the telephone business are few; but in the new Dean "Flash-Light" police and fire alarm system there is real utility. The ability to get in touch with any one or all of the patrolmen, instantly, night or day, is a necessity in a police department. Heretofore the sergeant had to be content with waiting for reporting time (about once each half hour) to issue orders. In case of emergency this wait would be sufficient to allow untold violence to be done or possibly murder or robbery to be committed, and the culprit to get away.

With the flash-light system criminals are caught red-handed, and a town thus equipped is no safe place for this kind of

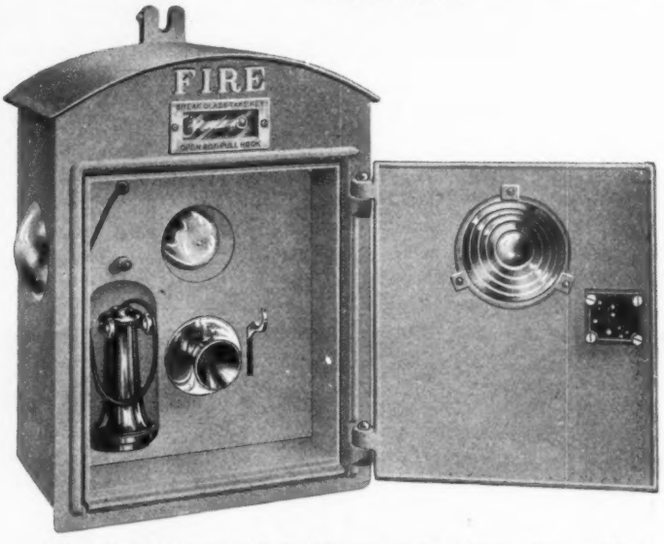


A View in the Telephone Laboratory of The Dean Electric Company. The Oscillograph, Shown in the Foreground, Allows Ringing and Talking Currents to Be Observed or Photographed for Record. It is with the Aid of Such Special Instruments That Dean Products Are Perfected.

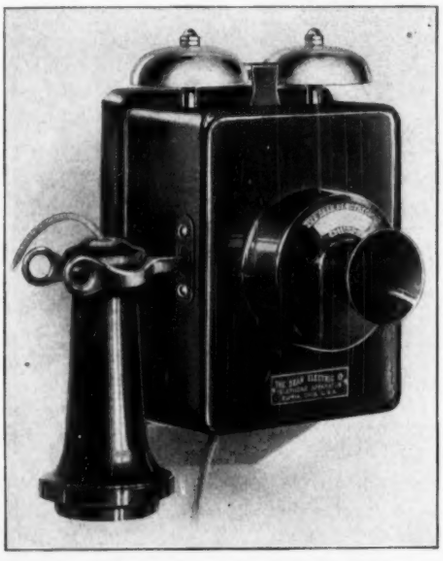
The New Dean Indestructible-Convertible Desk Set Box. This Is Used with the Dean Desk Stand or for an Extension Bell, and Is Made from the Base Portion of the Residence Set, with a Plain Cover.



One of the Many Designs of Dean P. B. X. Switchboards. The Swinging Relay Rack Is a New Dean Feature of Merit.




The Dean Flash-Light Police and Fire Alarm Box. This Is a New By-Product of the Telephone Business, which Is Creating a Big Sensation Throughout the Country. A Patrolman Is Called at Any Time, Night or Day, by a Powerful Light Controlled from the Central Station. Heretofore, It Has Been Necessary to Wait Until the Patrolman Reported Before Special Orders Could Be Given.



The Dean Indestructible-Convertible Residence Type Telephone. All of the Apparatus, Including the Hook Switch, Is Interchangeable with That in the Desk Telephone. The Exposed Portions Are Made from Heavy Drawn Steel with Permanent Rubber Enameled Finish.

The New Dean Indestructible-Convertible Desk Stand. The Transmitter Front and Mouthpiece Are Made Integral; Also the Portion of the Instrument from the Back of the Transmitter to the Bottom of the Base Is of One-Piece Construction.

gentry. It is said that the policemen who have shirked their duty in the past, "have it in" for the inventor of the flash-light box. This brings out another advantage of no mean importance.

The fire alarm feature is of special advantage, as only one system of boxes and circuits need be maintained. The continual use of the apparatus for police reports insures that it will be in instant readiness for fire calls. The sending of a fire alarm signal lights the signal lamp of the box, and serves as a guide to the station used, as well as automatically calls the nearest patrolman.

The advantages of the flash-light system are so many as to suggest the question, "Why have not the old makers of police and fire alarm equipments gone into something similar?" A like question has been asked time and again when other new devices have emanated from the Elyria telephone factory. The answer is so simple as to be uninteresting. The Dean organization has an ability to originate, and only confines its efforts to such products as have a commercial future.

The flash light is sold outright to the telephone company or to the city, the local Independent operating concern being consulted in every case as to the best way of handling the business.

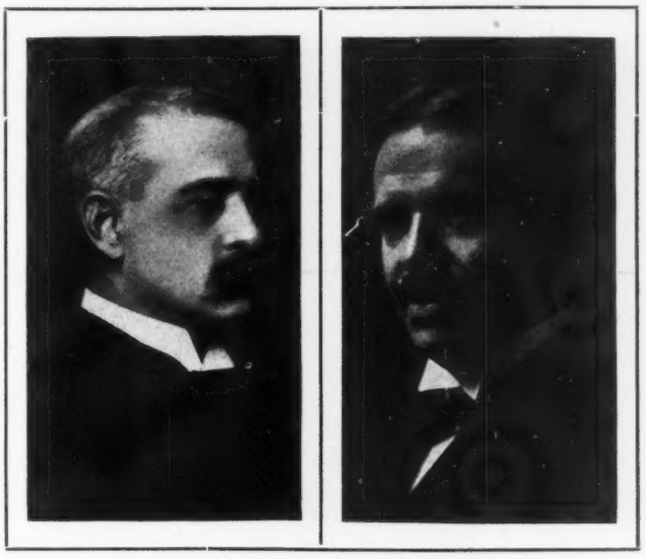
This gives the telephone company a chance to rent circuits to the city, and in turn the latter is guaranteed an uninterrupted service, due to the effectual method of handling maintenance in a telephone plant.

A NEW LINE OF CONVERTIBLE TELEPHONES.

This is the first announcement of a new line of all-steel common battery telephones which is being produced by the Dean company, and which are specified for the new St. Joseph, Mo., plant. The most notable features of these new telephones, outside of the "unbreakable" design, is the interchangeability of parts.

The transmitter and mouthpiece is an integral construction of seamless steel, with a black rubber enamel finish. It is fastened to the telephone by a heavy block, operated by means of a screw driver, thus making it unnecessary to use small screws which are difficult to manipulate and easily lost. The receiver is the new Dean electromagnet type, making the circuit extremely simple and giving the highest possible talking efficiency. It is incased in the Dean unbreakable steel shell, and is water proof and highly insulated. The hook switch lever is made a common element in all of this line of telephones, whether desk sets or wall instruments. When used for a wall set the cover contains the talking apparatus, while for a desk set a plain cover is used.

The business type telephone is made from the residence



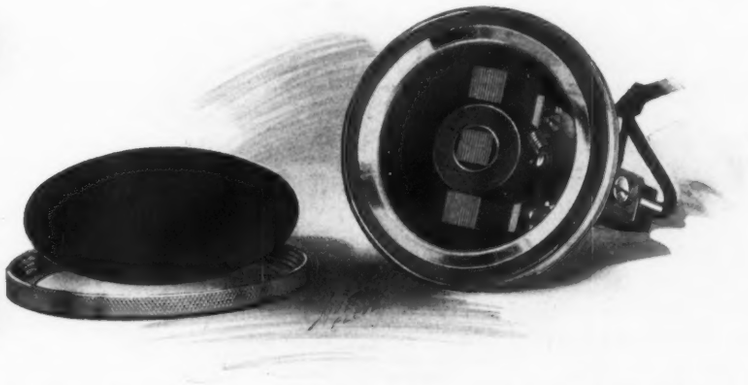
Mr. W. W. Dean. Mr. A. G. Bean.

instrument by the use of a steel backboard and writing shelf, giving a well-balanced and attractive design.

Everything which has been found to be useless and a source of trouble in the ordinary design of telephone has been abandoned; notably the knuckle joint arm in the wall and desk sets. This allows a one-piece construction to be employed from the transmitter to the bottom of the base in the desk stand, and a similar solid design in the wall sets.

All exposed steel of these telephones, excepting the gongs, is finished in a tough, baked rubber enamel which gives a permanent, high-grade appearance. There are no cracks or crevices in which dust or dirt can collect; and great care has been taken to highly insulate the circuit from all external metal. There is as little chance for shocks in this construction

The Dean Intercommunicating Desk Set with Keys for Ten Stations; Made from Indestructible Parts with Many New Operating Features.



The New Dean Electromagnet Type of Receiver, with Indestructible Steel Shell.

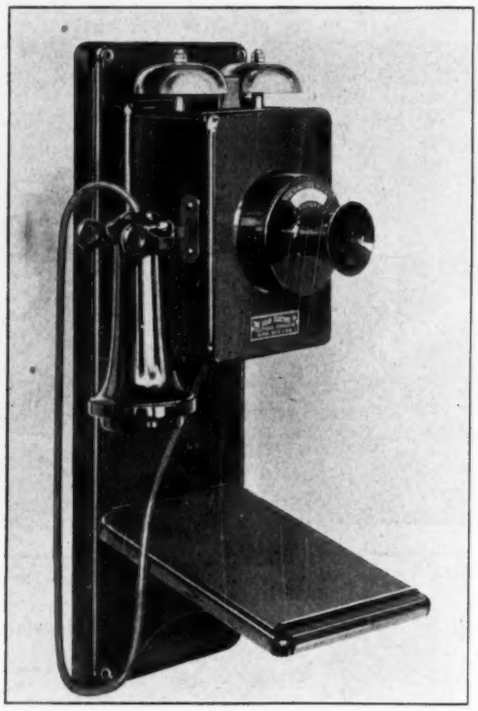
is of steel, with the reinforced construction used in all Dean telephones. It is removable for ease in handling and packing, and the same hook switch mechanism goes on both the wall and desk telephones without any change in construction.

The talking circuit apparatus is mounted in the upper portion of the desk standard, or in the cover of the small set, as the case requires. The base of the wall set has the ringer, condenser and line binding posts attached thereto, and as is possible in the best designs of the regular wood type telephones.

A convenient feature in the desk stands is the bringing out of the cord from either side of the base, instead of the back, as in regular practice. This makes it impossible for the cord to get under the desk stand base and is the means of saving many an accident.

The convertible feature of these telephones makes it possi-

ble to change wall sets into desk instruments by the providing at small cost of a desk standard casing, a desk connecting cord, and a plain bell box cover. The talking circuit apparatus is transferred from the lid of the wall instrument to this desk standard and the plain cover substituted for the former.



**The Dean Indestructible-Convertible Business Type Telephone. This Instrument is Made from the Residence Type by the Mere Addition of a Backboard with a Removable Type Shelf.**

A change from desk to wall telephones is merely a reverse of this procedure, while the making of a business type telephone from the residence type means the simple adding of a backboard with writing shelf.

Nearly every large city exchange has hundreds, or even thousands, of wall sets lying idle, which have been replaced by desk instruments. This convertible line of telephones has been especially designed to obviate such conditions.

The Dean company reports that the entire output of its factory for this new line of telephones has been contracted for, and that the first deliveries on new orders will be in January, 1910.

NEW TRANSMISSION APPARATUS.

The new line of Dean transmission apparatus is most complete, as it comprises everything from an indestructible type of transmitter to high efficiency toll phantom coils. In fact, the Dean engineers have specialized on talking circuit apparatus with a view of getting a little extra efficiency by eliminating useless parts which absorb and dissipate energy. Deteriorating elements have been felt out, as a means of preserving, indefinitely, the original high efficiency of the new apparatus.

Breakable elements, such as hard rubber or composition receiver shells and mouthpieces, have found an indestructible substitute in the Dean rubber enamel finish, seamless steel construction. These are expensive parts to make in a factory, but, once installed, no maintenance need be figured on this part of the telephone. It is claimed that the entire output of these steel shells is required in filling the orders for complete Dean instruments calling for this indestructible equipment.

NEW SWITCHBOARD EQUIPMENT.

Dean switchboards, both large and small, have had many refinements in the last few years, and contain such a large number of features of real merit that it would be out of the question to list them here. That these features exhibit special earning value to the users is best shown by the large sales of Dean equipments, which are reported from time to time.

A NEW INTERCOMMUNICATING SYSTEM.

The Dean company has entered the intercommunicating field with a line of apparatus which contains many important operating advantages. Special care has been taken to make the transmission and signaling conditions of the same high grade as regular main office equipment, and the regular line of Dean indestructible apparatus is used. Another advantage is the great accessibility and ease in installing. This is required in an intercommunicating system, due to the necessary complications in the cabling.

The success of any intercommunicating system depends largely upon the manner in which it is installed. This has prompted the publicity department of the Dean company in the writing of a special instruction book, entitled, "Installation of Intercommunicating Systems." This book contains much general matter which will apply to any make of system, and should be of special interest to those contemplating the purchase of new intercommunicating apparatus.

DEAN CONVENTION EXHIBIT.

The international convention exhibit of the Dean Electric Company will be made in Rooms 638 and 640 in the Auditorium Hotel. A line of standard telephones and switchboard parts will be shown. In addition there will be an express type switchboard, a small private branch exchange section, and a complete harmonic system in operation. The new intercommunicating apparatus will be exhibited for the first time, as will be the parts going into the new convertible type of common battery telephones.

The "unbreakable" steel receiver shells and mouthpieces, as well as the electromagnet type of common battery telephone receiver, will be of special interest to convention delegates. The Dean company claims to be too busy filling customers' orders to make any special exhibit, and as a consequence all of the material shown is standard stock product.

## Early Demands for Time Service Equipment.

In TELEPHONY'S editorial on time service, which appeared in last week's issue it was stated that Independent telephone companies are always on the lookout for ideas which will increase profits and add to the stability of their business. This statement has proven true in one instance at least, as the inquiries received by the Monarch Telephone Manufacturing Company regarding the time service system, announcement of which was made last week, have greatly exceeded expectations both in number and quality. They indicate that there is hardly a company large or small which is not thoroughly aroused to the possibilities of this new service.

The fact that a new source of revenue can be secured without a great outlay in additional plant equipment seems to have impressed every one. The questions asked regarding proper rates to charge, methods of securing subscribers, the equipment necessary and cost of operation have been so numerous that it has taken considerable effort to give each a complete and intelligent answer but by making use of Bulletin No. 16, just issued, the Monarch company has given these clock inquiries the usual prompt attention.

There now seems to be no doubt but that hundreds of telephone companies will soon be operating time service systems in connection with their telephone exchanges. Broadening the field of operation and the increasing gross and net profits should materially benefit the whole industry. The Monarch company is prepared to explain the plan in detail, and if there are any companies which have not yet received Bulletin No. 16 a postal card or letter will bring it promptly.

# The Cracraft-Leich Electric Company

In July of the year 1907, the Cracraft, Leich Electric Company was organized with a view of taking over the plant and equipment of the Eureka Electric Company, whose factory and offices were located at Genoa, Ill.

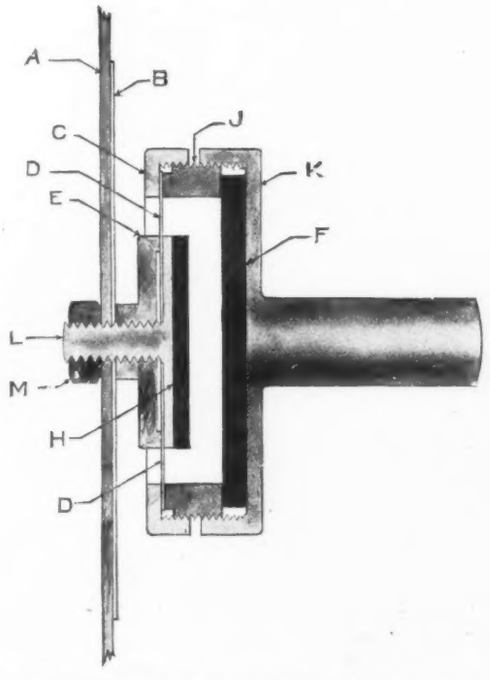
The Eureka Electric Company made a good grade of magneto telephone apparatus, more particularly during the last few years of its existence, but, due to the lack of a complete organization of telephone men, was unable to advance to such an extent as to make it a profitable business.

During the latter part of August of the same year the factory at Genoa was taken over by the new organization, and after becoming somewhat more familiar with the details of the apparatus while coming into actual contact with it, it was found that, although the apparatus was very satisfactory, it lacked that little step in advance necessary to meet competition on a square basis.

The new organization, recognizing this condition, at once set out to develop an entire new line of apparatus. It was a case of starting at the bottom, the facilities provided by the factory being fully ample for good workmanship. In fact it was very complete, comprising a power plant, brass foundry, plating department and all the necessary departments for an establishment devoted to the telephone manufacturing business.

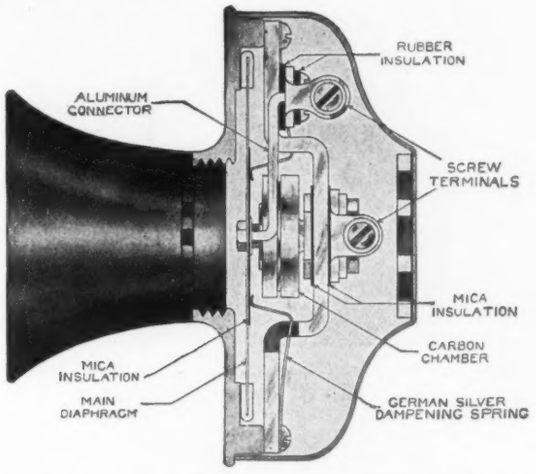
One piece of apparatus made by the former company was retained, however, and put on the market by the new organization, namely, the self-restoring drop and jack. In this particular piece of apparatus the old company seemed to have outclassed itself, as this combination drop and jack contained exceptional points of merit, was strongly constructed, and efficient.

It is interesting to note the progress made by the Cracraft, Leich Electric Company during the last two years and a half, or since the time the new organization went into effect, particularly in the light of such remarks as, "Oh, the telephone business is a tough game. See the prestige of the older established companies," or such remarks as "These fellows that start in the telephone business smile about two years."




Carbon Chamber and Diaphragm of Transmitter.

Let us further consider what has occurred since the Cracraft, Leich Electric Company entered the telephone field. Three months after its existence this country was out of money. The banks were passing out slips of paper, generally known as "scrip," in place of the real thing, and even at the present time this country is only slowly recovering from the effects of the business depression created at that time.




Cross Section of Cracraft-Leich Transmitter.

A few months later the Western Electric Company came out with its open door policy, not only inviting the Independent operating companies to buy its product, but actually trying to force them to do so through other channels.

The following cuts and descriptions of the apparatus will bring out more clearly the actual progress made by the Cracraft, Leich Electric Company, and for which all the necessary tools and appliances were made in its own factory, only such apparatus being shown as is now carried in stock and ready to ship. Space, of course, would not permit the use of views of the less important parts, such as push buttons, terminal blocks, binding posts, etc., which are just as essential as the transmitter, receiver, etc., to make the line complete.

THE CRACRAFT, LEICH TRANSMITTER.

For a transmitter to possess lasting qualities, its carbon electrodes and carbon granules must be encased in a chamber that is hermetically sealed.

The necessity of so sealing the carbon chamber can readily be understood, since the variation of resistance in the transmitter circuits is caused by varying the contact area and the contact pressure between the carbon granules themselves, as well as between the carbon granules and the electrodes. This effect being produced on the surface of the carbon only, any coating or deposits caused by moisture or other outside influences must therefore necessarily be harmful.

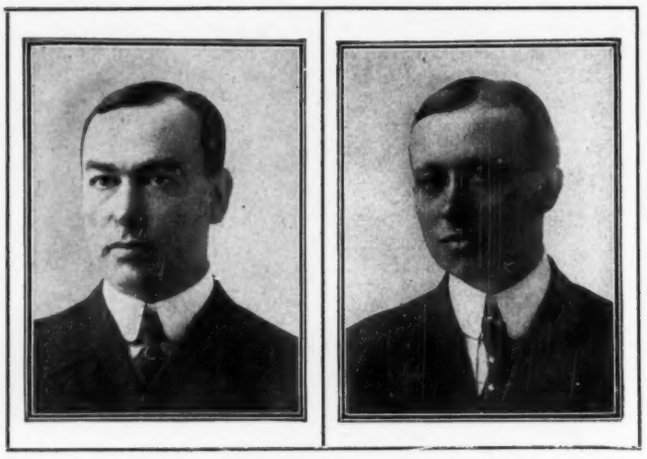
It is essential for at least one of the electrodes or carbon buttons to vibrate in unison with the sound waves in order to cause the battery current flowing through the transmitter to assume the same frequency as the sound waves. Therefore acoustical properties become the most important factor .

A drawing shows an enlarged view of the carbon chamber, including the carbon electrodes, and a portion of the main diaphragm.

The vibrating parts consist of the main diaphragm *A*, the auxiliary diaphragm *D*, the front electrode and support *H*, clamping nut *E*, mica insulation *B* and nut *M*.

The auxiliary mica diaphragm *D* is clamped uniformly around its entire periphery, thereby hermetically sealing the carbon chamber. A diaphragm so clamped assumes a certain natural pitch and will therefore respond or vibrate more readily to wave motion of that frequency.

The diameter and thickness of this diaphragm and the diameter and weight of the electrode *H* and the clamping nut *E* become the controlling factors in the acoustical tuning of the transmitter. These parts must therefore necessarily be of such dimensions and proportions as to assume a pitch approximately



Mr. J. P. Cracraft. Mr. O. M. Leich.

equal to the average pitch of the human voice in order to have the transmitter operate at the highest degree of efficiency possible.

The main diaphragm *A* acts as a vibrating disc and in itself assumes no particular pitch, since it is not uniformly clamped around its periphery. Two German silver damping springs rest against this diaphragm and are insulated therefrom by means of a mica disc *B* shown in the cut. These springs prevent any undue vibrations of the main diaphragm which would otherwise cause objectionable noises in the receiving apparatus.

In Cracraft, Leich transmitters, the carbon chamber is allowed to take its own natural set before it is clamped into the solid back. The auxiliary mica diaphragm is therefore not under tension when in its normal position, and will readily vibrate at the average pitch of the human voice. If the parts controlling the acoustical factors are not properly constructed, the defect will at once be noticeable when the transmitter is tested. Such transmitters can ofttimes be made to talk fairly well by imparting some tension on the auxiliary diaphragm or by some other irregular means.

Such doctoring, however, is dangerous as the results are not permanent nor uniform.

The second cut shows the construction of the transmitter. The connector through which the battery current passes from the outer terminal to the carbon chamber is made of aluminum. Other material, such as brass or copper, which has more or less spring action, would cause the transmitter to hum. The terminals are formed up in such a way that they can readily be gotten at from the side which makes it possible to remove the cords more readily when it is necessary to take the front from the back cup where same is fastened to the transmitter arm.

All parts connected with the circuit of the telephone are thoroughly insulated from the frame by means of hard rubber and mica.

CRACRAFT, LEICH RECEIVER.

The outer appearance of the receiver is shown below. The bipolar permanent magnet receiver resembles the standard construction of other well known types, and a description of the direct current receiver, which is rather a late product, will be of a more interesting nature.

The direct current receiver has been designed particularly for central battery exchange work, the object being to eliminate the induction coil, thereby cheapening the subscriber's set and at the same time dispelling the worries of the induction coil losses and for once clearing up the muddle of central battery telephone circuits and bringing them down to a sensible basis.

In this receiver the magnetization of the attracting core is produced by the receiver winding being excited directly from the central battery exchange current, thereby displacing the permanent magnets.

This eliminates the necessity of the so-called poling of the receiver when connected in series with the transmitter across the line, and, due to its short magnetic circuit, its resistance can be materially reduced.

A cut shows the general construction of the direct current receiver.

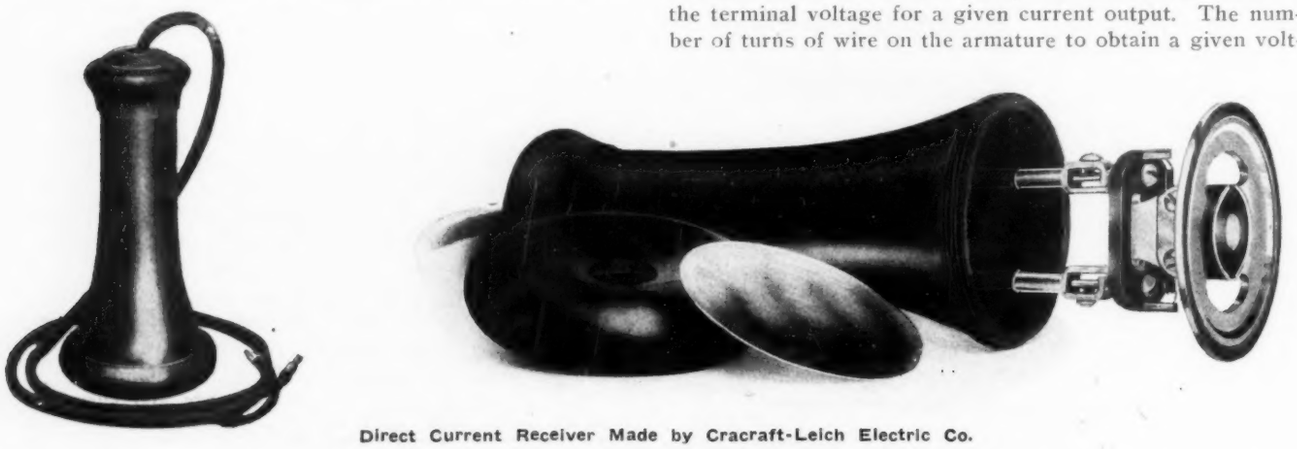
It is equipped with terminals to accommodate both tip and spade cord connections.

The shell is properly weighted to assure the proper switchhook action. Its mechanical design is exceptionally noteworthy, and in test it has shown itself to be exceptionally efficient on central battery lines having a resistance from one to one thousand ohms, bringing it well into the present day commercial limits.

CRACRAFT, LEICH GENERATOR.

As the magnetic force of the field magnets is naturally very limited, special attention must be paid to the proper amount of iron in that part of the magnetic circuit constituting the armature, and that the necessary air gap between the armature and pole pieces be made as small as possible and still have the proper clearance for safe operation from a mechanical standpoint.

Another very important factor is the winding space, since the armature resistance is partly the controlling factor of the terminal voltage for a given current output. The number of turns of wire on the armature to obtain a given voltage should therefore be a minimum, not only to prevent the excessive drop in voltage due to the resistance of the wire, but also on account of the counter magnetism produced when the generator is operated on a load.



Direct Current Receiver Made by Cracraft-Leich Electric Co.

In the design of these generators such points have been carefully guarded, and the output has been shown to be a maximum for the quantity of material used, the material in itself being of the highest quality obtainable.

From the standpoint of mechanical design every effort has been made to produce a machine possessing long wearing qualities.

The faces of the generator gear wheels are wide and the shaft bearings are long. The field pieces are solidly riveted together by means of brass studs and do not depend upon the end plates to hold them in their proper positions relatively to each other, and at the same time provide a good substantial support for the end plate, serving as bearing supports for the armature and gear wheel shafts.

It is only due to this superior construction that a small air gap is practical, which plays such an important part in the possible output of the generator.

All generators for both bridging and series work are equipped with an universal shunt spring. These springs are so constructed as to have sufficient length for the throw required, when the generator is opened, without bending them beyond their elastic limit.

The armature shaft is arranged in such a manner that a commutator for pulsating current can be attached at any time.

THE CRACRAFT, LEICH HARMONIC RINGER.

A cut shows one of the set of four harmonic ringers for party line service.

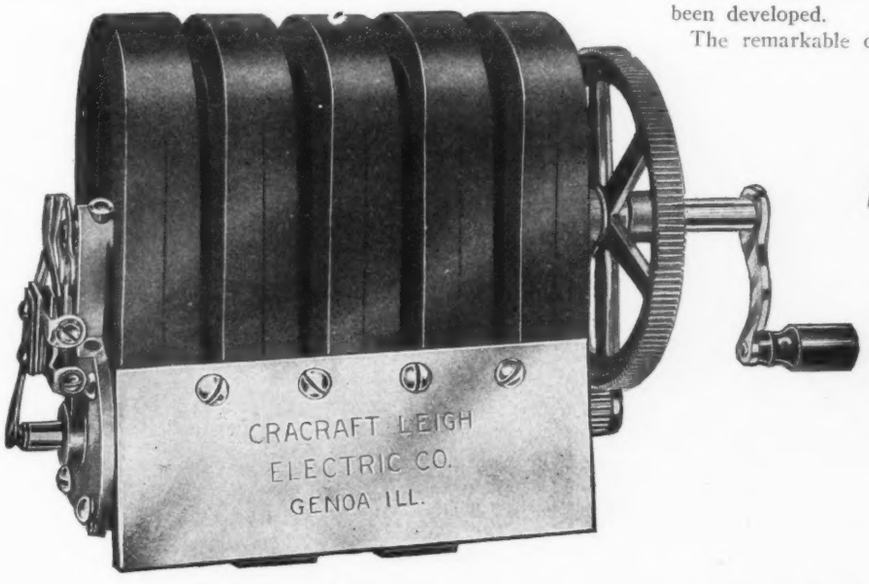
Each ringer is tuned to its respective frequency; namely, 16 2-3, 33 1-3, 50 and 66 2-3 cycles. The armatures are readily interchangeable and the reeds are accurately tuned to their respective frequencies.

Its general construction is exceptionally practical and solid. An eccentric gong adjustment is employed, making it possible to conveniently obtain an accurate adjustment when the ringer is mounted into the telephone cabinet.

THE CRACRAFT, LEICH DESK TELEPHONE.

Strength, neatness in appearance and the accessibility of working parts are the main characteristics of this desk telephone stand.

The hook switch springs and terminal block are mounted in the base. Space is also provided for an induction coil for magneto work. An induction coil for central battery use can also be mounted in the base to operate in connection with a permanent magnet receiver in place of the standard direct current receiver equipment.




Cracraft-Leich Generator.

It has a strong non-breakable brass adjustable head, constructed in such a way that any wear on same is taken up by spring washers.

The receiver hook switch is readily removable without taking the stand apart.

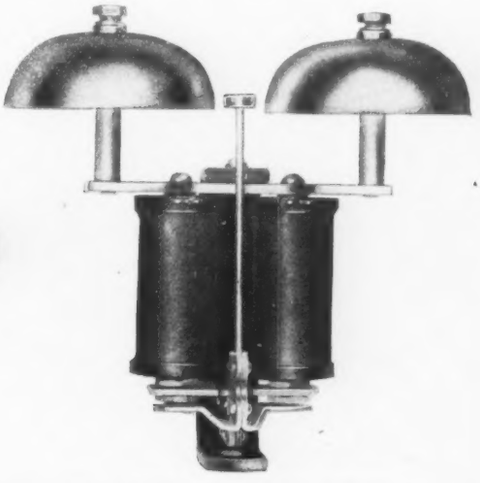
With the apparatus shown as a basis, a complete line of telephone for both magneto and central battery work has been developed.

Desk Stand with Hook Switch Springs and Terminal Block Mounted in Base. Induction Coil Can Be Mounted In Base for Magneto or Induction Coil Common Battery Circuit.

Standard compact type and desk type telephones for magneto work are equipped to meet the following requirements: Series, bridging, divided circuit, sure ring, center checking, subscribers' intersignaling, selective call central, silent ringing and four-party selective service.

For central battery purposes a line of wall telephones, desk telephones and extension bells equipped with single line ringers or harmonic ringers for party line work with either direct current receiver or standard receiver with induction coil has been developed.

The remarkable development of such high grade telephone apparatus in so short a period of time has, however, not brought the Cracraft, Leich organization to the end of its capacity in the development line, and several very promising experiments are now being carried on in its laboratories.



Recently Developed Cracraft-Leich Harmonic Ringer.

# Century Telephone Construction Company

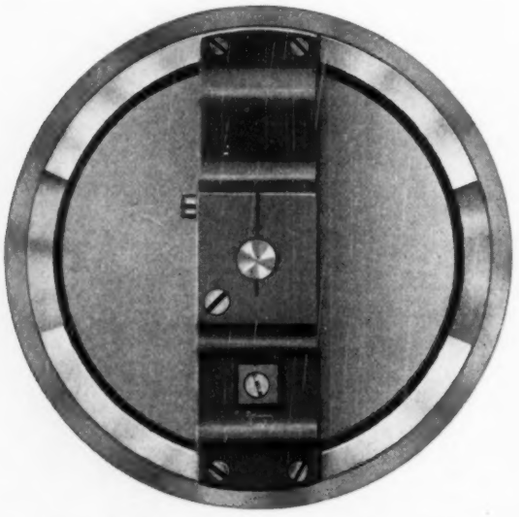
The manufacturing department of the Century Telephone Construction Company was organized in 1899 at Cleveland, Ohio, by its president, Mr. B. G. Hubbell, one of the well-known pioneers in Independent telephone development.

Recognizing the promising demand for Independent de-

**Century Desk Stand, of Which Standard May Be Opened to Give Access to Contacts.**

velopment in the East, the factory was moved to Buffalo in 1902, and has continued a steady growth up to the present time, always maintaining conservative business methods. In 1907 the company acquired a large manufacturing plant of 200,000 sq. ft. of floor space, and at the same time purchased all of the equipment of the Williams-Abbott Electric Company, of Cleveland; thereby providing a sufficient manufacturing capacity to enter the market of the country, the business previous to the enlargement in 1907 having been mostly confined to the East, where many Independent operating companies recognize Century apparatus as standard.

The Century company has always been one of the foremost in the development of apparatus to meet the con-



**Rear View Type "B" Century Transmitter.**

tingencies of changing operating conditions, and some of its product represents such distinct advances in the art of telephony as to be worthy of special mention. The portable desk stand illustrated herewith has been on the market for a number of years, and from the first met with popular favor. Owing to its rigid and substantial construction, and the fact that all parts are designed and arranged to afford the greatest convenience in handling with the smallest opportunity for trouble, it is said to be as cheaply operated as the wall type of instrument. Since desk sets are steadily increasing in popularity with the telephone using public, the Century company has enjoyed a very large sale of this particular piece of apparatus. The base is of sufficient weight, and such design, as to prevent the stand from being easily overturned. All exposed metal parts are heavily nickeled and highly polished. A center stem, which is turned from a solid brass rod, extends through the handle, forming a support for the transmitter knuckle, as well as for the switch hook and contact springs.

The handle, or pedestal case, is made of two pieces of heavy stamped brass, fitted together so as to match perfectly. These are securely held in place by a knurled ring placed immediately above the switch hook. By giving this ring a few turns the case may be removed, thus exposing the switch and its connections. This may be accomplished without removing any screws or even taking the receiver from the switch hook. The hook is formed from hard sheet brass, which is considered an important feature in desk set construction, inasmuch as the composition of sheet brass is such as to give it a resiliency which prevents the hook from being bent or broken in case the stand is accidentally dropped or knocked from the desk. The sheet metal is also free from flaws and blow-holes, often found in castings, and admits of a fine finish.

The induction coil is placed in the base, which eliminates one conductor of the cord and brings together the entire talking set. The design of the pedestal is such as to present a very neat, graceful and pleasing appearance. These desk sets, as are all Century telephones, are equipped with the company's standard talking sets, including the type B transmitter, which is also illustrated in connection with this article.

The Century company's experience has made it an en-

**Talking Parts of Century Transmitter.**

thusiastic advocate of the platinum electrode transmitter. It states that "owing to its composition, and the manner in which it is manufactured, carbon is of an exceedingly porous nature, and when used for transmitter electrodes the surface, in time, becomes pitted by disintegration, due

to the minute arcing in the carbon chamber during use. The fine particles of carbon thus set free settle around the granules, gradually creating a by-path of comparatively low, unvarying resistance. During this action the transmitter loses its efficiency, finally becoming packed. The many attempts to prevent this disintegration were principally along the lines of treating the surfaces of the electrodes for density and hardness. Although this treatment had some effect, it was not permanent, and seriously increased the resistance to such an extent, that the variable resistance was greatly reduced. Furthermore the treated carbon electrodes have to be polished ,and as this can never be exactly the same on any two, the surfaces are found to vary in thickness, causing unequal resistance in the different electrodes. It remained for the engineers of the Century Telephone Construction Company to offer a practical solution to this difficulty by the substitution of platinum for this purpose."

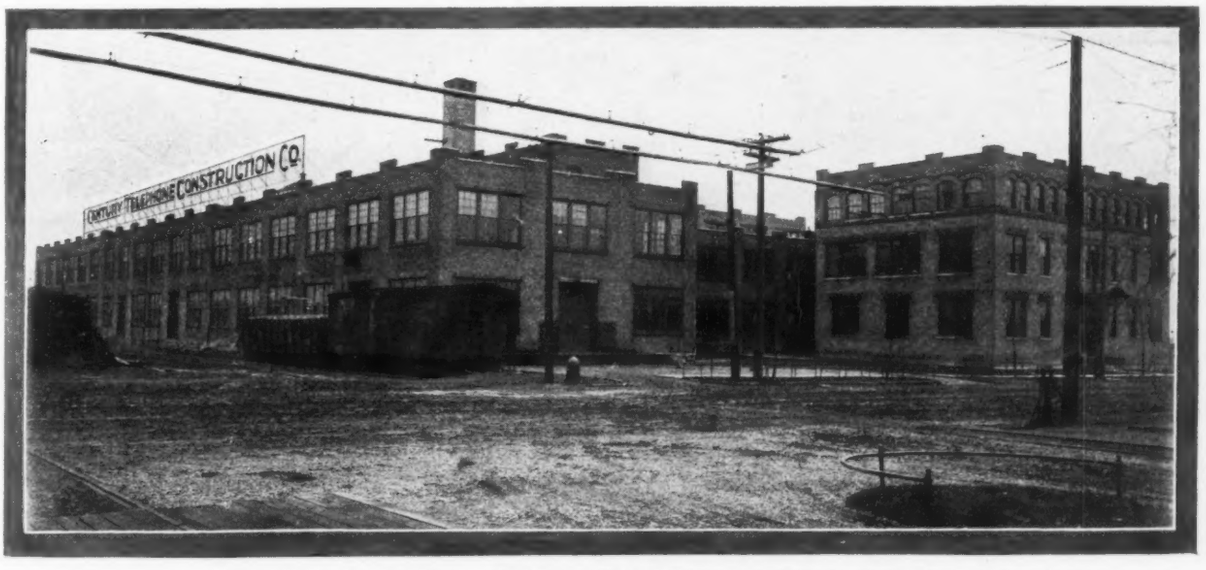
Platinum is found to possess many properties which peculiarly fit it for this use. Perhaps the most important of these is the exceedingly low surface resistance it is possible to obtain on electrodes made from this material. This is a great advantage in telephone work, as it admits of the whole resistance of the carbon chamber becoming effective, making possible, it is said, a greater variable resistance than where a higher resistance substance is employed. Another property which led to the adoption of this material is the fact that it will not melt at a temperature less than 3,227 degrees Fahr., which is the highest melting point of any of the useful metals. In fact, it is fusible only by the oxyhydrogen blow pipe. It is, therefore, especially valuable for use in electric circuits, where it is exposed to the action of the electric arc.

Since it will not disintegrate or blister in case of excessive current flow, it is claimed to entirely overcome the difficulties which are experienced from the use of carbon or gold for electrodes, and the trouble of frying, muffling, and packed transmitters. Scientific tests show, further, that it is unaffected by any single acid, and will not oxidize or corrode, all of which tends to prolong the life of the transmitter. While the adoption of platinum was a radical departure from standard methods of construction at that time, experience has since proven to its makers beyond a doubt, that it was one great stride towards transmitter perfection.

Besides the attention given the electro-chamber, the mechanical design of the Century transmitter has also been developed to a point where it is rendered practically indestructible, as a scrutiny of the accompanying illustrations and a study of its construction will show. Among the notable improvements is the elimination from its construction, of all soft rubber, felt, fabric, or other materials which will deteriorate with age or contact with moisture.

Mr. B. G. Hubbell.

A heavy celluloid ring insulates the diaphragm from the face plate, which displaces the soft rubber gasket formerly employed, and the diaphragm is protected from the corroding action of the breath by an auxiliary diaphragh of transparent, waterproof material which covers its entire outer surface. A single spring of stiff phosphor bronze serves both as a damper and a connector, this forming the circuit from the front electrode to the connecting screw, which passes through the bridge. There is a slight indentation at each end of this spring, one of which fits over a hard rubber insulating point, and the other over




Factory of the Century Telephone Construction Company, at Buffalo, N. Y.

the tip of the connecting screw on the inside of the bridge, as a safeguard against its being slipped out of position. This spring is so placed in relation to the diaphragm and the electro-chamber as to produce the proper damping effect on the former, and remove all pressure from the

Century Drops, Front View.

latter. As it is placed underneath and parallel with the sides of the bridge, it is invisible from the rear, and gives the transmitter a very neat, clean-cut appearance. This method of construction also eliminates unsightly damping springs and connecting straps.

The bridge is made from heavy rolled sheet brass, and formed so as to present a neat and graceful appearance when assembled in the transmitter. The bridge block is also of brass, and is securely attached to the bridge by machine screws, passing through from the inner side. This is separated from the bridge by an insulation of clear sheet mica, and has a slot milled longitudinally through about three-fourths of its length, with a machine screw passing through both parts, which provides a simple and reliable means of clamping the rear electrode stud. A machine screw is provided on top of this block for the cord connection with the rear electrode. A square stud passes through the bridge, and makes contact with the damping spring which connects with the front electrode, the outside end of this stud being tapped to receive a machine screw for making connection with the other conductor of the cord. This stud is, of course, carefully insulated from the bridge.

The diaphragm is of aluminum, and is so formed that it has a normal set away from the speaker, but when assembled in the transmitter the center is forced out by the pressure of the damping spring, so as to give it a slight dish in the opposite direction, or toward the speaker. This wave-like formation "tunes" the diaphragm, rendering it extremely sensitive to sound waves produced by articulate speech. On account of it being formed away from the resistance chamber at its center, any expansion due to radiation of heat causes the diaphragm to buckle slightly outward, or away from the electro-chamber. This causes a corresponding separation of the electrodes, and prevents any possibility of packing from this cause.

The electro-chamber consists of a set of heavy brass rings which are turned from solid rod on automatic machinery, insuring absolute uniformity, and interchangability of its parts. The ring which forms the shell or wall of the chamber is knurled on its outer surface, and threaded inside. Into this threaded portion are screwed the brass cap rings, which firmly clamp the mica diaphragms carrying the front and rear electrodes. The space between the electrodes is filled with an exceedingly hard and dense granular carbon, which is carfully selected so as to obtain a uniform size, and before being placed in the cup is heated sufficiently to thoroughly remove all moisture. The cup is sealed immediately after receiving the carbon, and is designed so as to render it absolutely impervious to air and moisture.

In addition to the various parts being protected against natural depreciation, every precaution has been taken to reduce the possibility of damage by rough handling to a minimum. There are no abrupt formations or threaded portions of the diaphragm or other delicate parts, and the most vital part, the electro-chamber, is well protected by being placed behind the diaphragm and the damping spring.

Another piece of apparatus on which the Century company has enjoyed a heavy sale is its "Type 14" self-restoring magneto switchboard. This may well be termed an innovation in this class of apparatus, on account of the many new and advanced ideas incorporated in its design.

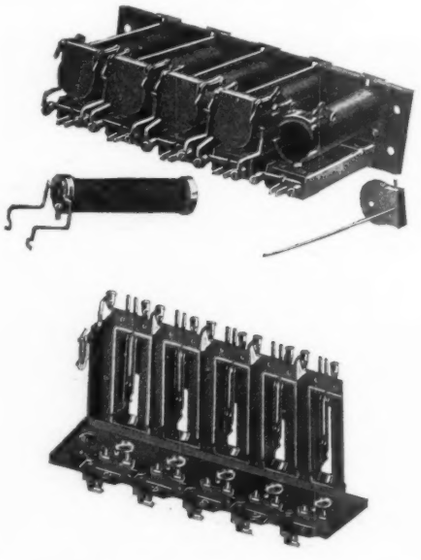
The line equipment, which probably receives the most severe usage, and is, therefore, the most subject to wear, was given first consideration.

This consists of combined drops and jack of the self-restoring type, mounted in strips of five. They are so designed that the coil may be removed from any drop, complete with its core, in an instant, without the use of any tools except a small screw driver.

The drops, jacks and shutters are mounted on heavy one-piece steel face plates, which are attached to metal stile strips in the switchboard by means of heavy machine screws. This insures perfect alignment of the drops and freedom from troubles due to warping or shrinkage of the cabinets.

The jack frame is formed from one piece of rolled sheet brass instead of being built up of a number of pieces of soft iron, and the contact springs are placed on edge in hard rubber insulation, these being held in position by a brass cap plate in such a manner that it is unnecessary for any bolts or screws to pass through the springs. This renders them practically self cleaning, and the method of construction avoids jack troubles due to defective insulation around screws, etc. Instead of simply forming up the tails of the jack springs, and tapping them to receive the machine screws for making connection with the coil terminals, brass binding posts are provided for this purpose. This precludes the possibility of trouble from stripped threads in case the machine screws are set up tightly.

The jacks are of the double cut-off type, which removes

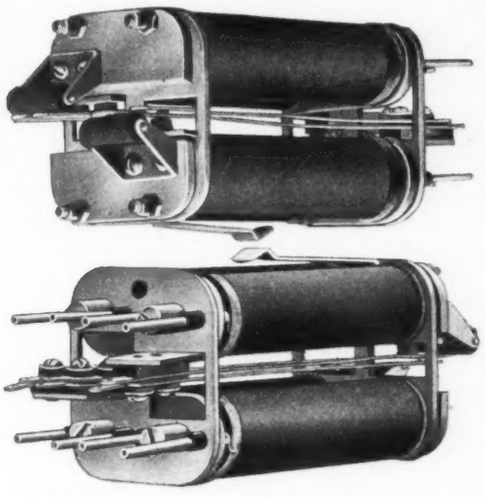


Bottom and Rear Views of Century Drops.

both sides of the coil from the circuit while the plug is inserted. A separate spring is provided for making contact with both the tip and sleeve of the plug, the sleeve of the jack forming no part of the circuit. The springs are carefully insulated from each other with sheet mica, and provided with pure platinum contacts. The drop coils

are wound directly on the core, the winding, of course, being carefully insulated therefrom, and the entire spool is removable from the shell complete, by simply lifting the latches on the rear of the shell and removing the armature.

This method of construction is a very decided improvement over the old way of winding the coil on an iron tube, and sliding this over a core permanently attached in the shell. The drop coil winding terminates in German silver connectors, which are attached to the head of the spool. These connectors are notched at the lower end for engaging the screw connection on the jack springs, and which admits of their being removed from, or replaced, under the machine screw without completely removing the screw.



Front and Rear Views of Century Relays.

It will be observed that the design of this drop is such that all flexible or hinged connections between the latch trigger and the armature are avoided, these being rigidly attached together, which precludes the possibility of any lost motion, or other troubles of this nature.

The restoring device is exceedingly simple, including only a short sleeve pivoted across the path of the plug, immediately in front of the jack springs. To this is attached a pin which protrudes through the face plate immediately behind the lower edge of the drop shutter, which, when in a calling position, is in the direct path of this pin. The plug, upon entering the jack causes the sleeve to assume a horizontal position, forcing the pin outward and causing the shutter to be restored.

A very valuable service feature which is included in this switchboard is a type of cord circuit employing a condenser and a double coil clearing-out drop, which insures positive ring-off signals and absolutely prevents one subscriber ringing through and calling back the other.

The Century company makes a specialty of designing and building switchboards to suit particular or peculiar conditions, and has the reputation of never failing to meet the demand of its trade.

Still another example of Century originality which may be cited is the relay, of which two views are presented here. There are many advantages in a relay of this design, the most important of which is the double coils with large winding space. This admits of a large number of convolutions, and as both poles of the electromagnet are presented to the armature, the full benefit of the magnetic field is obtained.

The successful operation of common battery switchboards depends, to a great extent, upon the efficiency and reliability of the relays which control the various circuits, and it was this fact which the engineers of the Century company had in mind when this relay was designed. Its construction admits of long, flexible contact springs, which, with the roller bearings, insure perfect results with a minimum of current consumption. The end pieces are made of rolled sheet brass, with projections formed out to provide a support for the contact springs; heavy brass springs are attached to the center of both the upper and lower sides of the front end plate, which are formed out at the end, to provide a snap-latch for holding the cover in position. The cover is drawn from a single piece of soft iron, and has an indentation formed on the inner surface of the upper and lower sides, which engages the latch springs when the cover is in position. A knob is riveted into the center of the closed end of this shell to provide a convenient finger grip for removing the shell.

As will be observed from the accompanying illustrations, these relays come in pairs, or in other words, there are two relays in each shell. This, together with its square form, results in great economy of space.

### W. E. Doolittle Joins "American" Organization.

Mr. Walter E. Doolittle, for years president of the Sterling Electric Company, of Lafayette, Ind., has severed his connection with that company, and joined forces with the American Electric Telephone Company and the American Electric Company, of Chicago. Mr. Doolittle will be associated with P. C. Burns and J. G. Ihmsen, of the American companies, in an official capacity.

Mr. W. E. Doolittle.

Mr. Doolittle is one of the "old guard"—in point of experience, not years—of the Independent telephone industry, and has been one of the aggressive factors in this field for many years. He is widely known and universally respected, and his association with the American Electric Telephone Company is considered sure to prove advantageous for that concern.

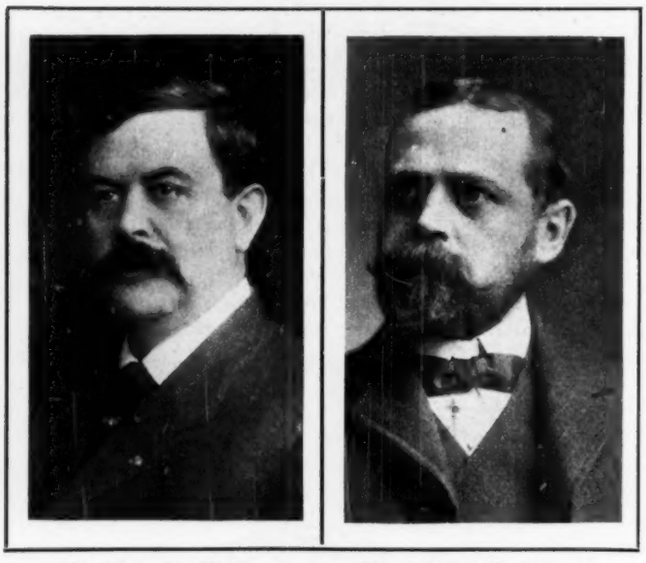
### Gave the Bell Too Much Credit.

An examination of the November 27 TELEPHONY shows, in the article "Competition as an Independent manager has seen it," a sentence which reads, "Our home city, of about 18,000, has a 'Bell affliction' of perhaps 11,000 subscribers." Of course, this is a printer's error; the correct number being about 1,100. The correction, although obvious to most of the readers of the article, is made at the request of the author.

# The North Electric Company

The North Electric Company was organized under the laws of the state of Ohio, in January, 1899, with Mr. C. H. North, president; D. B. Wick, vice-president; Geo. C. Steele, secretary and treasurer.

Previous to the organization of the North Electric Company,



Mr. Chas. H. North. Mr. Edward E. Clement.

Mr. C. H. North, under the name of the North Electric Works, had been engaged in the manufacture of telephone equipment in Cleveland for more than eleven years.

Originally the company was engaged exclusively as manufacturers of magneto telephones and switchboards, for which it still has a large demand.

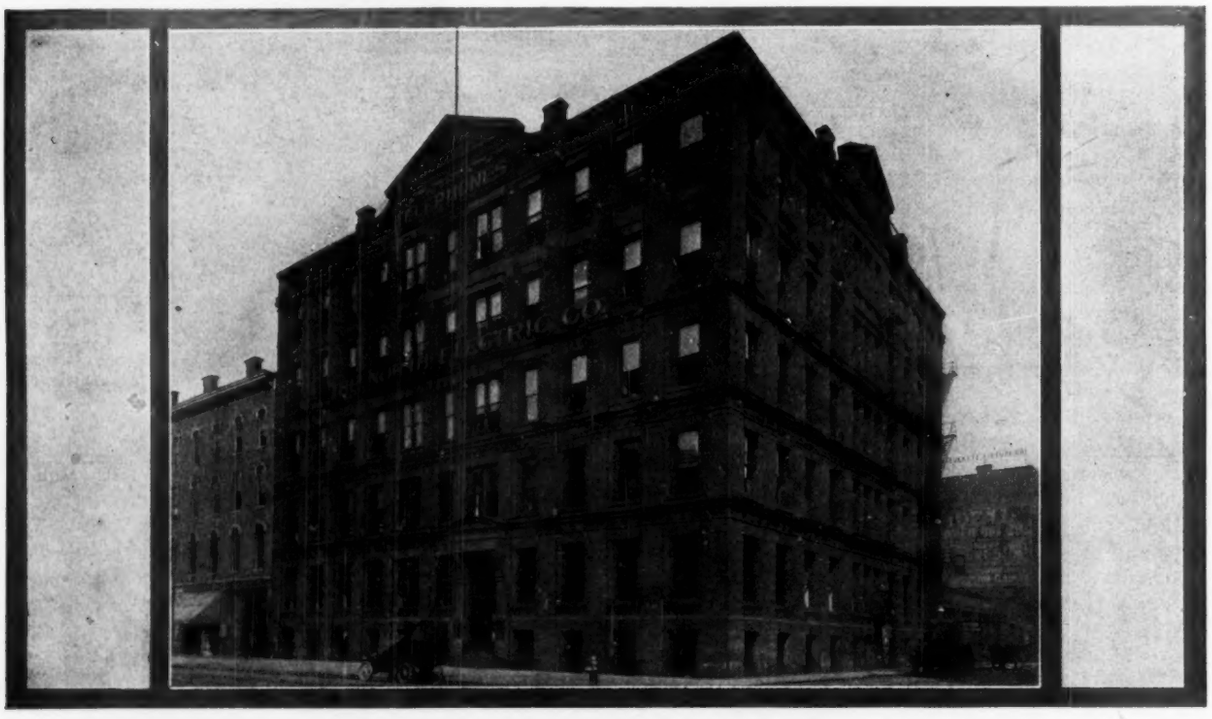
The North supervisory system, based upon common battery signaling and local battery talking, was first brought out in the year 1900. This system was installed at Sandusky, O.; Lancaster, O.; Findlay, O.; Jefferson City, Mo., and many other points, a number of which installations are still in successful operation.

In the year 1901 the company began the manufacture of full common battery switchboards and telephones, and the quality of this line of apparatus manufactured is indicated by the fact that of all the common battery systems installed since the year mentioned not one has ever been discarded or replaced, but all of them are still rendering efficient and satisfactory service.

The growing demand for the company's apparatus, particularly in the West and Southwest, made it necessary to establish a southwestern branch, and the Dallas office and warehouse was established in the year 1904, followed by the Kansas City branch two years later.

In the year 1907 the company acquired all patents, rights and title to the Clement-Automanual System for the United States and Canada. This system, the invention of Mr. Edward E. Clement of Washington, D. C., has been in process of development for a number of years, during this time owned and controlled by the National Engineering Corporation. Since its purchase by the North Electric Company development work on the system has been completed and the first commercial exchange ever installed has been in operation at Ashtabula Harbor, Ohio, for a period of something more than six months. This system was illustrated and described in considerable detail in TELEPHONY, November 20. On account of the numerous advantages of the Automanual System it is the intention of the company to make this its principal product.

The Clement-Automanual system, as is well known, is a radical departure from all previously recognized lines of development in telephone practice. Although an operator is employed to receive calls, she does not complete the connections directly. Her functions, beyond receiving the call, are confined to setting up the desired number upon keys similar to



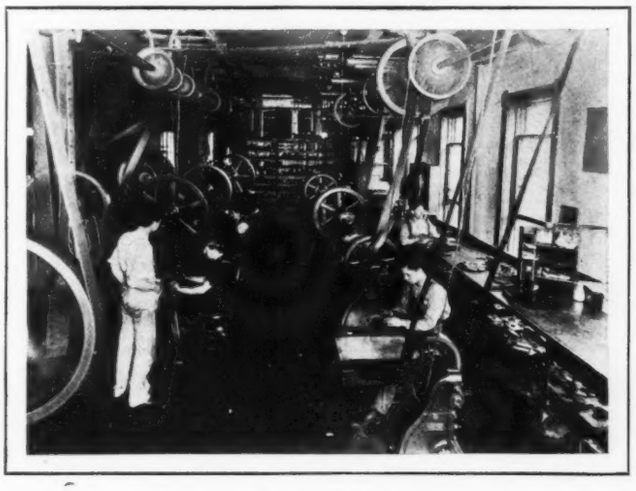
The North Factory at Cleveland, Ohio.

those of an adding machine. When this is done she is through with that call and is ready for the next one, the completion of the call being effected by automatic, step by step, selecting and switching mechanism. Calls are automatically registered before an idle operator, so that no subscriber has to wait for an answer. The mechanical devices which compose the system are worked out in a highly ingenious manner, so that but few fundamental parts, and combinations of parts, are used in the complete system, parts of similar size and shape being employed to perform different functions.

The switches are installed, in groups suitable for handling 100 lines each, in a compact, rigid frame, so that they may be assembled and thoroughly adjusted and tested in the factory. Consequently they may be installed, ready for operation, within a brief time after receipt at the exchange where they are to be cut into service.

Striking points in connection with the system are the rapidity with which an operator may dispose of calls, thus making it possible for one operator to handle a great number of calls per day, and the economy in floor space obtained both in the operating room and in the switch room.

At the time the article on the Ashtabula exchange was published in the November 20th TELEPHONY, no accurate means of timing calls was available, reliance having been placed upon stop watch tests, in which the personal equation necessarily



Punch Press Department.

involved a high percentage of error. Since that time a chronograph has been connected to take a time record of calls, and Mr. Clement has furnished to TELEPHONY one of its earliest records, which indicates to within .01 second the speed of handling a connection.

The company three years ago began the manufacture of the synchromonic system of party line selective signaling. This is a variable frequency system, and the standard frequencies for four party selective service are 30, 42, 54 and 66 cycles per second. If five frequencies are desired the additional frequency is 16 2-3 cycles per second.

The synchromonic converters are of two distinct types, commonly designated as the common battery and dry battery converters.

### New Trunking Board Going in at Kansas City.

The Kansas City Home Telephone Company, since installing its first equipment in 1903, has more than kept pace with that rapidly growing western city, and through its efficient service has built up one of the largest systems in the Central West. The main exchange, which has an ultimate multiple capacity of 12,600 lines, now has an equipment of 9000. Originally the first four sections of the board were reserved for "B," or trunking positions, but so rapid has been the development of the branch exchanges that the need of additional positions became imperative. After considering future growth, and the advatnages in case of fire, it was decided to install a wholly new "B" switchboard in a separate room, and to re-equip the

Magneto Switchboard Department.

old "B" sections as regular operators' positions. The work of installing the new "B" board has been commenced, and is progressing rapidly.

In general design the new board is quite similar to the regular subscribers' board, differing from it in having two operators' positions per section instead of three, and seven panels instead of nine in the jack space. The initial installation is to consist of six sections, with ten operators' positions equipped. Each position is provided with thirty plug-ended incoming exchange trunks, individual four party ringing keys, and the usual operators' equipment. The incoming trunks are of the

Portion of Telephone Assembling Department.

latest type, being provided with automatic machine ringing, and lamp flash "don't answer" and "busy back" signals.

In addition to this new apparatus at the main exchange, extensions are in progress at three of the branch exchanges, which when completed will give the system an equipment as follows:

Main extension, 9,000 lines; East branch, 3,620 lines; South branch, 3,500 lines; Linwood branch, 2,080 lines; Kansas City, Kans., branch, 1,680 lines.

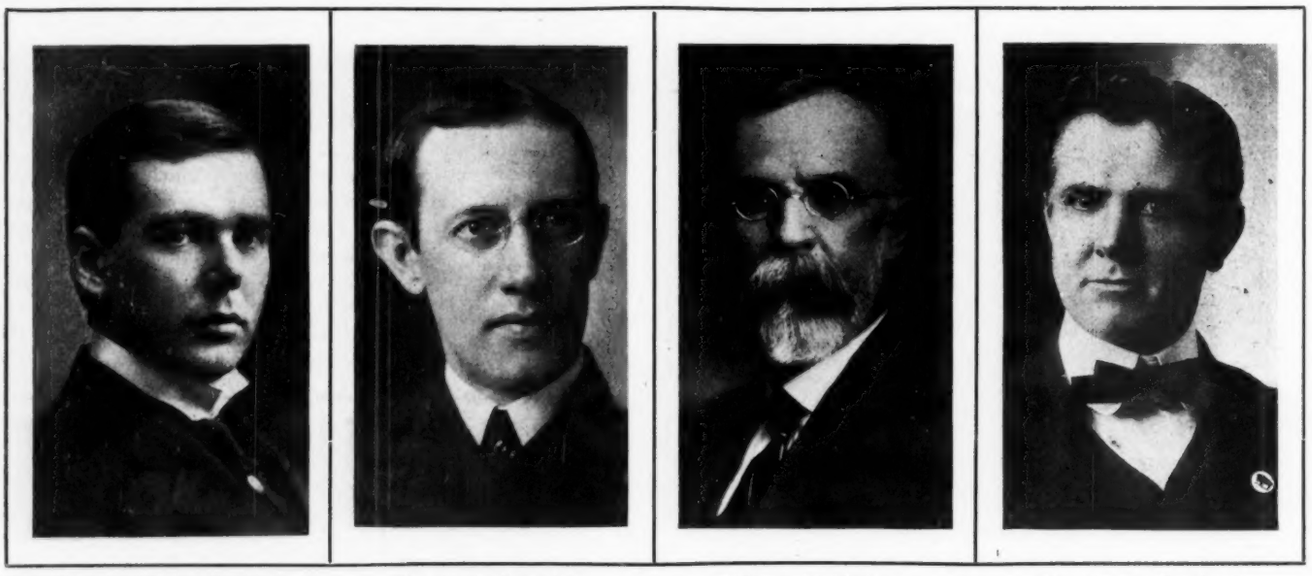
The apparatus throughout the entire system was manufactured and installed by the Stromberg-Carlson Tel. Mfg. Co. of Rochester, N. Y.

# The Sumter Company

The name Sumter is prominently identified with the history of our country, both telephonic and otherwise. At Fort Sumter the first gun in the Civil War was fired, and at the City of Sumter, S. C., 90 miles away from the fort, belongs the honor of firing the first gun in the battle for Independent telephony in the South.

Long before the birth of the telephone, Sumter was the headquarters of an electrical industry. Here many of the telegraph instruments used by the Confederate army were manufactured, and as copper, silk and rubber could not be obtained, it was necessary to use other materials to as great an extent as possible. Cows' horns were used instead of rubber. These were boiled until soft, and then flattened into sheets and cut up. The tips of the horn were used for key knobs. Copper bars from France were brought through the blockade in Charleston harbor and drawn into wire, which was laboriously covered by hand.

It may be said that the present Sumter Telephone Manufacturing Company was the outgrowth of this business. Charles T. Mason, Sr., made these instruments, assisted by his son C. T. Mason, who is the president of the present company. It was the early training and experience received in this shop that to a great extent determined the present Mr. Mason's life work.



Mr. H. R. Van Deventer. Mr. F. C. Manning. Mr. C. T. Mason. Mr. C. G. Rowland.

With a view to perfecting himself in electrical and mechanical engineering, young Mason went north, and, after careful training, accepted a position as superintendent of a large machinery plant, where he had supervision over 2,000 employes. He was only 21 years old at this time.

At the Philadelphia Centennial, 1876, Mr. Mason saw the exhibit of the original Bell telephone, and early realized the commercial practicability of the device, which was then looked upon as little more than a toy. The time was not ripe, however, for him to take up this work, and he turned his attention to other matters, and soon produced several notable inventions of a mechanical nature.

The call of the South became too strong to be resisted, and Mr. Mason returned to his native city. He soon realized the spirit in the South to keep abreast with other sections of the country in electrical development, and he turned his attention to the establishment of electric lighting plants in many Southern cities, identifying himself with the Westinghouse interests. About this time the telephone began to be considered as a possible means of practical communication, and, realizing that the many small cities and towns of the South could not secure telephones owing to the small size of the systems, which would not be considered by the only operating company of that day, he determined to make instruments for himself. He produced an instrument which for that period was unexcelled, in spite of the fact that nearly every conceivable device was covered by patents. Strange as it may seem, some of these early Mason telephones are still in use, giving good service alongside of more modern instruments. The transmitters were of the pendant carbon type, and receivers of the single pole variety. The hook switch operated by pushing the receiver between two prongs, which moved sliding contacts like a knife switch, not operating by gravity because the gravity hook switch was covered by a patent when this instrument was designed. Since this period Mr. Mason's unusual ability as an inventor of electrical and mechanical devices has manifested itself in the high standard reached by the products of the Sumter company, his inventions being covered by many patents, notable among which will be recalled his famous "Multi-discharge," square coil, lightning arrester, the Mason transmitter, receiver, "Unitype" switchboard, and many others. These patents enable the Sumter company to embody many exclusive features in its instruments.

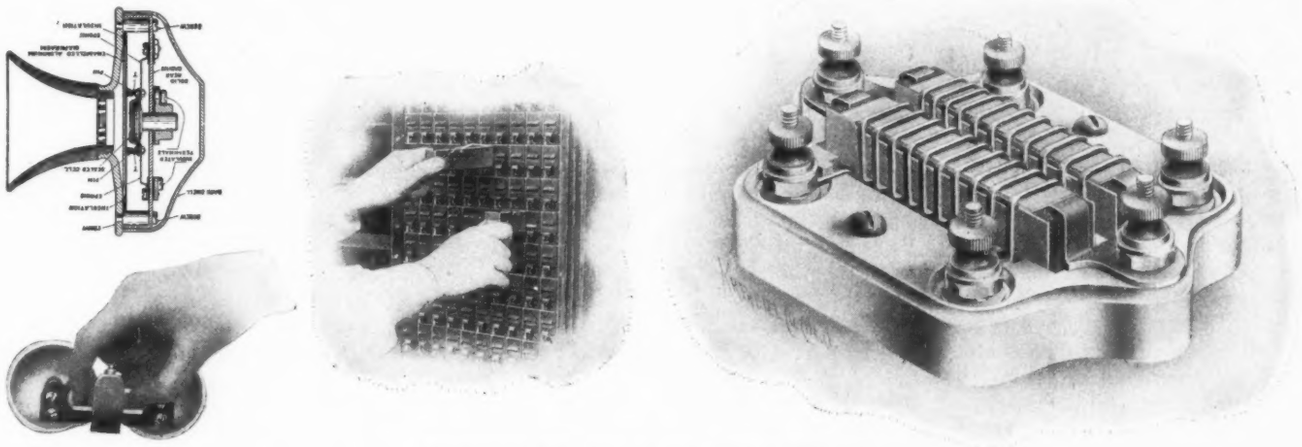
Mr. Mason continued the manufacture of this equipment for several years, under the name of the Mason Electrical Works, his product at this time coming to the attention of Mr. F. C. Manning, hereafter mentioned. Soon thereafter a new company, known as "The Telephone Manufacturing Company" was formed by these and other gentlemen, to take care of the rapidly growing business.

About the year 1900 Mr. Mason and Mr. Manning arranged the present company, a new corporation known as the Sumter Telephone Manufacturing Company. Thus it will be seen that the present company may claim to have an experience dating back to the pioneer days of the industry, and as an actual fact, was among the very first to manufacture a complete telephone.

The present factory grounds cover a little less than 10 acres, and the buildings are so placed that they can be enlarged without interfering with the general design of the plant. The buildings are substantially constructed of brick and have upwards of 400,000 sq. ft. of floor space. The works are provided with private side tracks, coal and lumber yards, and other

facilities for quickly receiving and handling new material. A private, standard gauge railroad provides facilities for quickly transporting heavy loads from one department to the other.

Sumter is located in the heart of an agricultural section, and has no manufacturing plants that can in any way furnish parts, tools or machinery for the telephone factory. Therefore the Sumter company is equipped to make everything entering into the telephone, even the tools, dies and special machinery for manufacturing the various parts; and for a number of years it has been its policy to make everything, with the exception of rubber parts, receiver cases, mouthpieces, etc. Other manufacturers are fortunately located near other plants who can often produce parts for them cheaper than they can do it themselves, but by the Sumter method each part is of known quality, on the principle of "Make it yourself and you know it's right."



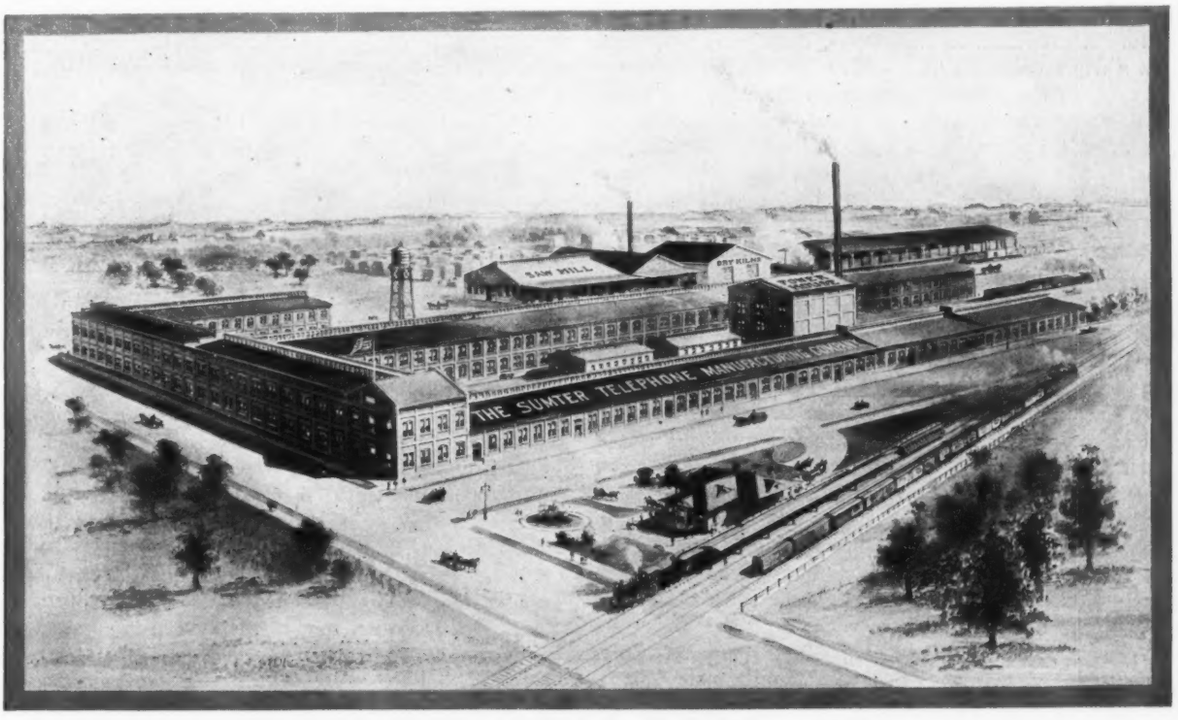
Equipment Produced in the Sumter Factory.

The best grade of oak is taken in the log, sawed, thoroughly dried, and made into cabinets which are finished by hand, thus producing the piano polish finish for which Sumter apparatus is justly famed.

For many years the product of the Sumter company has been confined to heavy duty magneto telephones, and, by making a specialty of this line, a type of equipment resulted of the very highest quality. Of late years various types of common battery switchboards and telephones have been added to the line, and, as an indication of their worth, it may be said that the Sumter company has just completed an order for several thousand of these instruments for the United States Signal Corps for service in the various army posts, forts and barracks throughout the United States and the Philippines.

Some of the latest Sumter products are shown in the accompanying illustrations. The "Utility" all enameled desk stand, the "Mason" arrester, "Unitype" switchboard, "Midget" common battery wall set, and "Mason" transmitter and receiver are particularly worthy of notice as being typical of the latest products of Independent engineering skill.

Southern climatic conditions in certain sections are unusually severe, the atmosphere being hot and moist. This makes the greatest care necessary to secure high insulation and freedom from corrosion. The various cables for Sumter switchboards are completely immersed in tanks of boiling beeswax, where they remain until thoroughly saturated. Then, after being con-




Plant of the Sumter Telephone Manufacturing Company.

nected to the apparatus, they are heavily coated with shellac, dissolved in the best grain alcohol, thus giving them a durable, glossy finish and rendering them practically impervious to moisture. This and many other matters of detail of a like character are given most careful attention, and the result is a product singularly free from the small troubles so annoying and so often present in even the best equipment not manufactured where these peculiar requirements are necessary or fully understood.

The Sumter company is peculiarly Independent. It is essentially home owned and controlled, practically all of the stock being held by local men. The board of directors are business men prominent in the financial affairs of the City of Sumter and the South. Among these may be mentioned Mr. C. G. Rowland, treasurer of the company since its organization. Mr. Rowland is president of the Farmers Bank & Trust Company, of Sumter, and brings to his position these qualities which only years of experience in financial matters can give. His careful financial guidance has resulted in a liberal and constructive policy, which, combined with honest business methods, has proven advantageous alike to the company and its customers. Mr. Rowland is a railroad man of many years experience, having been prominently identified with the Atlantic Coast Line Railroad, and its work at Sumter. This makes Mr. Rowland peculiarly fitted to look after the customers' interests as to quickest and best routes for shipment, tracing, etc., and this part of the business receives his personal supervision.

Mr. F. C. Manning is vice-president and secretary of the company. Mr. Manning's interest in the Independent telephone field dates from about 1894, when he was connected with a machinery and electrical supply establishment interested in equipping the cotton mills, which at that time were rapidly building throughout the South. A private telephone system was frequently required in these establishments, or communication between the mill, power-house, store, railroad station, officers' residences, etc., and Mr. Manning became much interested in supplying this demand, furnishing equipment of various manufacturers, of whom, in those days, there were very few. While on a trip through South Carolina Mr. Manning saw for the first time, in the City of Laurens, S. C., a "Mason" telephone. Being impressed with the superior workmanship and efficiency of this instrument as compared with the telephone apparatus he had thus far been able to secure, he proceeded to Sumter to learn something more of the instrument. Thus it was about the year 1894 when Mr. Manning and Mr. Mason first met, and Mr. Manning was so impressed with Mr. Mason's marked ingenuity and the superiority of the apparatus he was then making, as compared with other equipment on the market, that he at once became interested in the development of Independent systems, and began a systematic organization of telephone companies in various sections of East Tennessee, North and South Carolina, and Virginia. During 1895-6 Mr. Manning was instrumental in building quite a number of exchanges throughout the territory mentioned, equipping them with apparatus furnished by the Mason Electrical Works. During the spring of 1897 Mr. Manning severed his connection with the electrical and machinery supply business, and became identified with "The Telephone Manufacturing Company," which had been organized to take over the business of the Mason Electrical Works. Mr. Manning remained with the Telephone Manufacturing Company until he, Mr. Mason, and Mr. Rowland organized the Sumter Telephone Manufacturing Company, as above set forth, since which time Mr. Manning has served the company in the capacity of vice-president and secretary, the sales and purchasing departments being under his supervision.

When the large territory through which the Sumter Telephone Manufacturing Company is doing business is considered, its customers extending throughout the United States, Canada, Mexico, Cuba, and other foreign countries, there is sufficient evidence of the successful methods employed in the sales department of this company; the long list of old customers who have been constant patrons of the company since its inception represent a feature of which Mr. Manning is justly proud, this being indisputable evidence of the durability and satisfactory service rendered by Sumter products, even under the most adverse operating conditions.

Mr. E. H. Rhame, assistant secretary, has been in charge of the order and bookkeeping department since the company's inception. The office of this company is provided with all modern devices used where system, without red tape, is in vogue. Mr. Rhame is ably assisted in this department by Mr. E. M. Hall, who has also been with the company for a number of years and as a result of the very useful and systematic manner in which the orders and accounts are handled, the company has frequently been complimented on the service rendered from this department.

Mr. H. R. Van Deventer, electrical and sales engineer, is one of three brothers who made electrical pursuits their life work. After completing a collegiate education and obtaining the degrees of B. S., E. E., Mr. Van Deventer took up general engineering work, being employed in responsible positions by several of the larger operating companies. Realizing the field for Independent telephony in the South, Mr. Van Deventer became associated with the Sumter company. Immediately the advantage of his fifteen years of practical experience in the operating field was apparent, especially in connection with actual service tests, and the design of special circuits to meet certain conditions. The United States government specifications are particularly rigid as to inspection, and the technical details of the apparatus to be furnished, and Mr. Van Deventer has been remarkably successful in devising tests to locate imperfections in raw or finished material, with the result that every order of Sumter apparatus submitted has been inspected and approved without change or rejection in any particular. By means of a fully equipped laboratory, with connections through cable to the city exchange, many miles of cable being in circuit if desired, Mr. Van Deventer has attained actual service conditions for tests, which all Sumter apparatus must undergo before leaving the factory.

Mr. Van Deventer is a well-known contributor to the technical press on various subjects of a practical nature. Being a registered patent attorney and member of the various engineering societies, he also realized the necessity of collecting and preserving the literature of the telephone art. To this end he has for many years gathered data, models of apparatus—especially early designs of Mr. Mason, etc., some of which have but recently proved of great value in patent litigation of vital importance to Independent telephony.

Mr. Van Deventer has long desired to contribute something of permanent value to telephone literature, and, after more than two years' labor, has just completed "Telephonology," a work of nearly 600 pages with over 700 illustrations, describing in detail modern apparatus, systems, and methods, written especially for the practical man, and valuable to the large and small exchange. This work incorporates data never before obtainable outside the engineering offices and laboratories of the larger operating companies and manufacturers. The appearance of this work is awaited with interest.

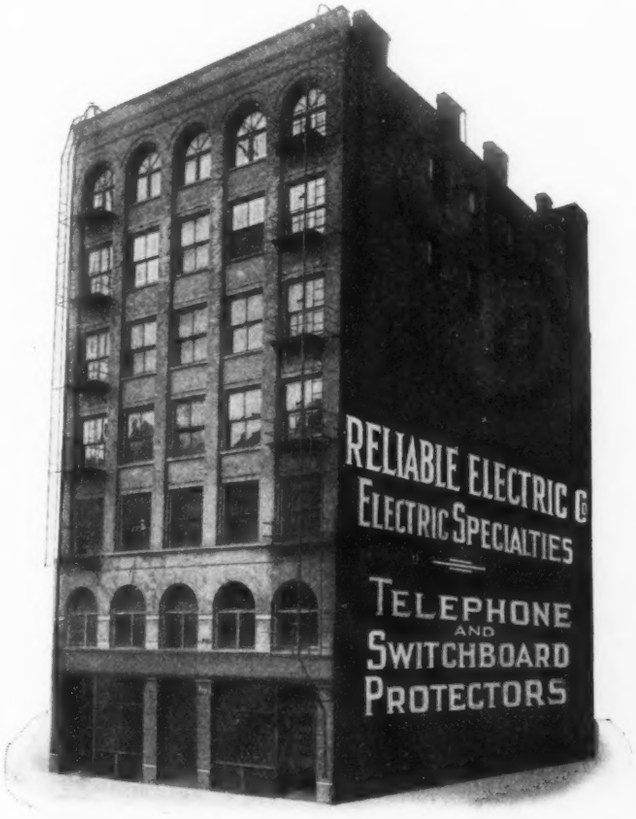
Mr. Van Deventer handles the advertising, and usually represents the Sumter company at conventions, and in other ways booms Sumter products. Throughout the South he is widely known as a thorough Independent, and practical telephone man.

No better illustration of the industrial progress of the South is in evidence than this mammoth plant, the only one of its kind in the southern states. The Sumter factory stands as a monument to the cause of Independent telephony, the quality of its equipment, and the ability of those who constitute its working and executive force.

# A New Company

The accompanying illustration shows the manufacturing plant of the Reliable Electric Company at 12 and 14 South Jefferson street, Chicago. While the company is a new one, the men behind it are well known to the telephone and electrical trade and have devoted many years to the manufacture and sale of telephone protective devices. The company, which is an Illinois corporation, will manufacture a line of telephone and electrical protectors and specialties, several of which will be entirely new. The factory has been equipped with modern machinery, and the new company is in position to fill all orders promptly. The trade name adopted by the company is "Reliable" and all goods turned out will bear that name. Telephone men attending the International Independent Telephone Association Convention, December 7, 8 and 9, are cordially invited to visit the Reliable factory.

The officers of the company are all experienced men. Mr.




Building Occupied by New Manufacturer of Protectors.

F. W. McMeal, the company's president, has been with the American Electric Fuse Company for more than ten years, working up to the position of general superintendent, which position he has held for the past six years, resigning on December 1 to take the presidency of the Reliable company. The manufacturing end of the business will be under Mr. McMeal's personal direction.

George W. Rodormer, vice-president and sales manager of the company, has had a wide experience in the sales end of the telephone protector business. He was with the American Electric Fuse Company for about ten years as traveling representative. He has a wide acquaintance among telephone men, having traveled extensively. He will have charge of the sales management of the company.

Mr. O. C. Junge, the secretary and treasurer of the company, is a young Chicago business man of considerable experience in electrical work.

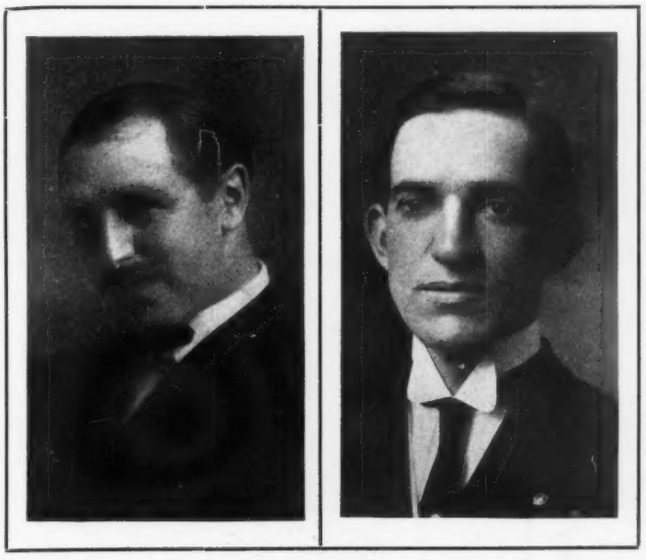
All members of the company are young, aggressive and will

Mr. F. W. McMeal.

devote all their time to the manufacture and sale of the company's line. Buyers are invited to send inquiries for prices, which will be given prompt attention.

### Telephone Thwarted Robbers.

John Powers, a farmer living near Kewanee, Ill., stopped payment of a check which had been forced from him by a masked robber under threats of death, by telephoning to the bank after the robber had started on his way to the bank, driven there by Mr. Powers' son. The farmer and



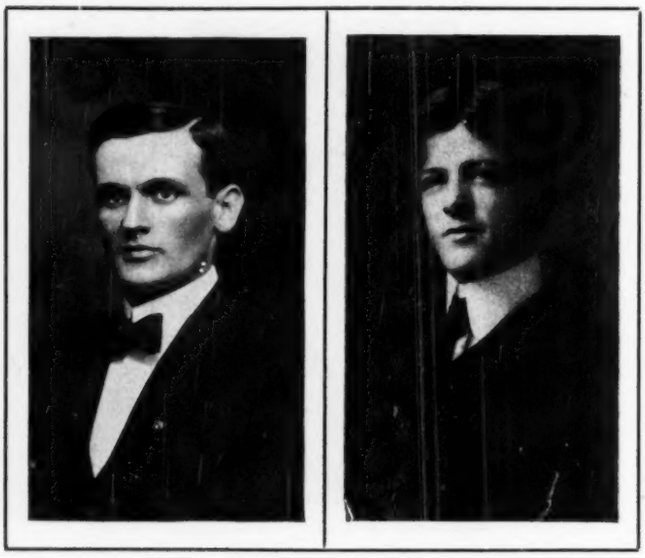
Mr. G. W. Rodormer. Mr. O. C. Junge.

two hired men had been strapped to trees, but after a struggle Mr. Powers succeeded in freeing himself, and immediately his thoughts were of the telephone, of which he quickly made use.

This is another of the many instances when a single telephone message is worth a year's rentals.

# Western Telephone Manufacturing Company

As TELEPHONY announced early in the year, the oldest Independent manufacturer, the Western Telephone Manufacturing Company, moved its factory from Muskegon, Michigan, where it had been located for the past five years, to its new plant at 122-124 North Curtis street, Chicago.



Mr. Horace E. Anderson. Mr. W. T. Jenks.

Its new plant comprises a modern, mill construction, two story brick building containing 18,500 square feet of floor space, well lighted and well ventilated. The general offices and the lighter branches of its industry are located on the second floor, and the heavy machinery and general heavy line construction material is housed on the first floor. The factory is fully equipped throughout with new machinery of the latest design, and at no time in the history of the company since its organization eighteen years ago has it been so well equipped for manufacturing.

In addition to a complete line of local and common battery telephone apparatus, this company is now producing a new line of intercommunicating telephone equipment, and the new system is meeting with general approval wherever installed.

In May this company underwent a complete change in the personnel of its officers, and the business is now under the exclusive management of its secretary and treasurer, Mr. Horace E. Anderson, who has been connected with the company for a number of years, for a time in the capacity of traveling representative and later as the general manager of its Chicago office. Mr. Rolland L. Porter, a retired capitalist of Milwaukee, Wisconsin, is its president, and Mr. H. A. Porter, of Chicago, vice-president. Mr. W. T. Jenks is general superintendent, in charge of manufacturing.

Mr. Anderson's personal acquaintance with the general electrical trade, including jobbers, manufacturers and operators, is giving a new impetus to the already established trade of the company, and the Western Telephone Manufacturing Company reports a good outlook for increased business and is optimistic regarding the future of the Independent telephone manufacturers. Since moving into its new factory the sales have been rapidly increasing, which perhaps may be accounted for by two reasons: one that it has moved to the logical center of trade for the middle west, Chicago, and another that the standard of the quality of several of its types of magneto instruments has been raised, owing to the addition of several marked advantages in the general construction and make-up of its telephones.

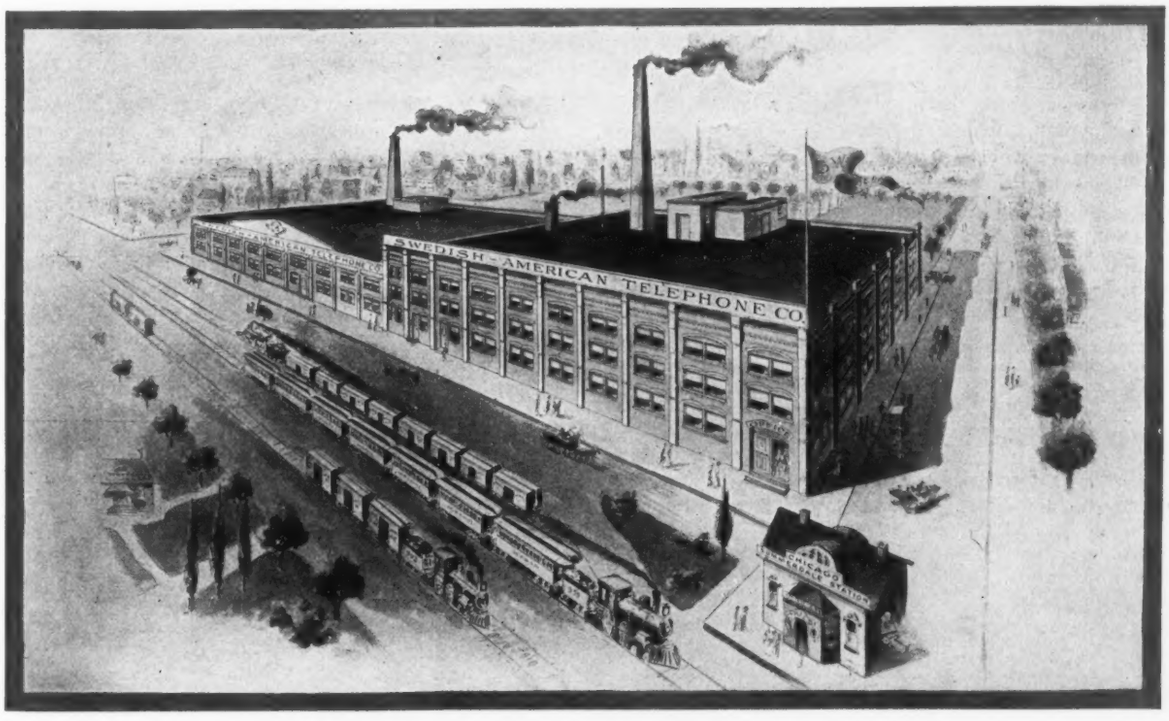
Building Which Houses the Factory and General Offices of the Western Telephone Manufacturing Company.

A complete line of telephones, switchboards, telephone supplies and line construction material is carried in stock at the new Chicago factory, and standard telephone merchandise can be shipped the day orders are received.

# The Swedish-American Company

It is common talk that the telephone equipment turned out by the Swedish-American Telephone Company shows the intention to have it stand A No. 1 in the matter of beautiful finish and workmanlike construction. This reputation holds good for the complete line which includes telephones of all styles and central office equipments, all parts of which are from the original designs of the Swedish-American company. Special attention is paid to the magneto business.

The new factory of this company occupies a whole square on the North Side in Chicago, and in it 300 people are employed. This will perhaps surprise many who have not visited the plant since its first small beginning in January, 1900. In the first six years it moved seven times, which was faster than the average small boy outgrows his trousers. And the growth hasn't ceased by any means, for the quality of Swedish-American products forces a constantly increasing demand. Recently, too it has built a large factory in Canada, the better to build up an already large business in the Dominion. The company will be represented at the convention, as usual, by President E. B. Overshiner,, A. V. Overshiner, and others.




**Manufacturing Plant of the Swedish-American Telephone Company, Chicago.**

### Chicago City Officials Recommend Meter for Use on Subscribers' Telephones.

An interesting test of the regulative powers of a municipality over the telephone business may soon arise in connection with a recent recommendation of a committee representing the City of Chicago.

Acting under powers conferred by the ordinance governing the operations of the Chicago Telephone Company, this committee, consisting of Commissioner Hanberg, Corporation Counsel Brundage and Alderman Snow, after investigation, has recommended that the Chicago Telephone Company install a service meter of the type manufactured by the Measured Service Company, in which officials of the American Electric Telephone Company are interested. The ordinance provides that as soon as a satisfactory meter is on the market it shall be installed by the telephone company at the station of each subscriber using service of a certain class.

The description of the meter recommended, and its method of operation, is as follows:

The instrument is designed to be placed upon the telephone subscriber's premises and operated in such a manner that the subscriber always has before him a record of the total number of telephone conversations carried on and further contains features which permit of the telephone exchange operators or clerks securing information as to the total number of times a given subscriber's telephone has been used within a certain period.

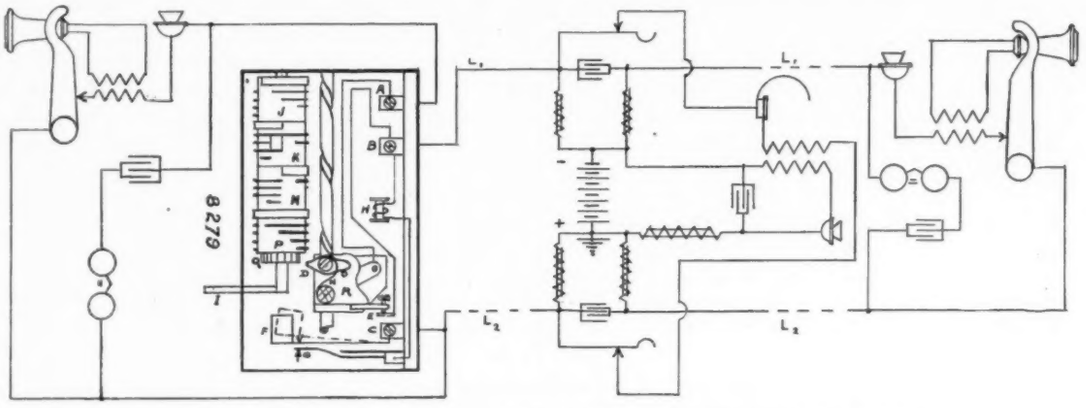
The subscriber registers by pulling down a lever, advancing the counter one number; a buzz notifies the operator of the act. Registry is made at the request of the operator, after she observes the answer of the called subscriber.

Statements are furnished, on request, by the subscriber manipulating a special lever. This operates clockwork which records, in dots and dashes, on a tape controlled by electro-mechanism which may be wired to a plug for connection to subscribers' lines. The operator obtains a verification by telephone at the time this count is taken.

Although the committee representing the city has recommended a particular type of meter, the telephone company seems disposed to use an altogether different type, if any at all.

An official of the Chicago Telephone Company stated that the company has a telephone service meter for use at all subscribers' stations which it believes will work in a satisfactory manner. The meter is enclosed in a metal case which may be fastened to desk or wall in a location convenient to the user of the telephone. It is of the push button type, that is, the subscriber has to press a push button when giving the operator the number of the sub-

scriber desired. The act of pushing the button sets a spring which is operated by the armature of a double wound electromagnet. After the number called for is obtained the operator presses a button throwing current through one coil, attracting the armature to that coil, and causing the spring to operate so as to register on a counter, which is in full view of the subscriber. In case the number called for is not obtained the operator throws current through the other coil and releases the spring, which in turn releases a striker to sound a signal, thus notifying the subscriber of the inability to get the desired number.




Circuit Showing Connections of Service Meter Recommended for Chicago.

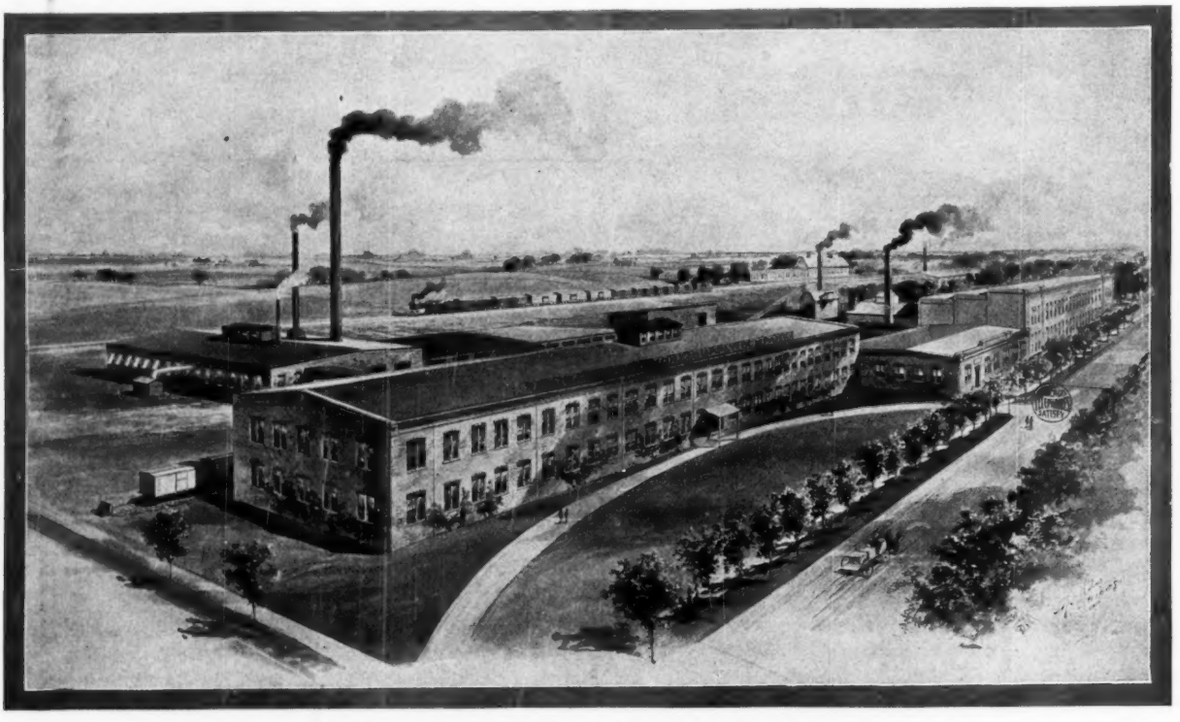
The mechanism, which in many respects resembles mechanism for coin box telephones, covered by patents which have been reviewed in TELEPHONY from time to time, was designed by the engineers of the Chicago Telephone Company and the A. T. & T. Company.

The number of subscribers to the metered service in the telephone company's system is in the neighborhood of 8,800. For some time, in the main office of the company, a meter has been used on the switchboard for keeping track of the calls. This is reported to have given satisfaction to the extent that subscribers have made no complaints against it. The city ordinance, however, requires that a service meter shall be installed at every subscriber's telephone on the meter service plan. The telephone company states that there has been no demand for the meters from the subscribers.

**The Chicago Telephone Supply Company.**

One of the pioneer factories which has had its share in the marvelous growth of the Independent telephone industry is the Chicago Telephone Supply Company, of Elkhart, Indiana. As early as June, 1895, it started in to make telephone apparatus on a small scale, occupying a building in Chicago. Its history has been the usual one of repeatedly outgrowing its quarters, until finally a large factory had to be built. Elkhart, Indiana, was chosen on account of its proximity to Chicago and excellent shipping facilities, as well as to assure good labor conditions.

The company manufactures an extensive line of switchboards and telephones, which are attractively described in connection with its factory in a booklet bearing the title, "How Telephones Are Made." No mention of this company would be complete without reference to its president, Mr. G. A. Briggs, who for years has been a familiar figure at telephone conventions wherever Independents have gathered together in large numbers, and Mr. George Brown, secretary, who ably seconds the efforts of Mr. Briggs to maintain the popularity of "Chicago" equipment.



Factory of the Chicago Telephone Supply Company.

# Telephone News

**South Dakota Convention, Sioux Falls, January 12, 13, 1910; Northwestern Cedarmens' Association, Chicago, January 11, 12, 1910**

### Rochester Telephone Company Turns Down Bell Merger Proposition.

A telegram from Rochester, N. Y., dated November 30, verifies the statement previously reported to TELEPHONY that agents of the Bell telephone company have been endeavoring to obtain a controlling interest in the Independent system at Rochester. The Rochester Telephone Company received a definite proposition and its executive committee turned down the offer for control. The proposition was made through a local bank, but was traced back to a Bell source.

Telephony's correspondent at Rochester covers the matter as follows:

In spite of an injunction specifically directed against the American Telegraph & Telephone Company and its officers, by office and name, that company has this week, by an old subterfuge, attempted to defy the Empire state and its supreme court. Through dummy agents it attempted to obtain control of the Rochester Telephone Company, but failed. Whether it will renew its attempt remains to be seen. The eyes of state officials, and Independent telephone men all over the country will now be directed at Rochester, and if the Bell interests get an inside track they will have to be "slicker" than heretofore.

The executive committee of the Rochester Telephone Company met Monday at the Powers Hotel and one of the matters presented was an offer from men who bore no outward stamp of Bell interests, for the control of the Rochester Telephone Company. Investigation by certain Rochester telephone men revealed the fact that the men making the offer were connected with the Bell interests. The offer was turned down. The fact that the Bell was to make an offer through an apparently non-Bell source was made known here about two weeks ago by a local paper. This knowledge of the Bell's actions caused investigation to be made by certain aldermen and no satisfactory denial was made to them of the Bell's intention. This operated mainly to defeat the passage in the common council of the ordinance permitting the Rochester company to increase its business rate from $48 to $60. While the Bell is actively attempting to obtain control by hook or crook, the ordinance is likely to be delayed.

Details of the veiled offer of the Bell made yesterday are meager, but it is known that a local bank acted for the Bell. Through it the Bell interests were traced back by Rochester telephone men and the liability of such a scheme now becoming successful is greatly lessened.

### Nebraska Association Incorporates.

The Nebraska Independent Telephone Association has just taken a step, in its incorporation under a new plan of organization, which makes it the leader in a new movement which promises to exert a greater influence on Independent progress than any event since the famous Berliner patent decision.

In effect it unites the different companies of the state into a single system, capable of securing to members substantial benefits in co-operative work for the development of the business, and in defense against improper attacks of a competitor.

The new articles of incorporation were adopted on Nov. 23 and filed Nov. 24. They will go into effect immediately. The articles are as follows:

We, whose names are hereto subscribed, do hereby associate ourselves as a body corporate under the laws of the state of Nebraska, and do hereby adopt the following articles of incorporation, to-wit:

ARTICLE I.

The name of this corporation shall be "Independent Telephone System of Nebraska."

ARTICLE II.

The principal place of business shall be the City of Lincoln, County of Lancaster, and State of Nebraska.

ARTICLE III.

The general nature of the business to be transacted by the corporation and its objects and purposes are as follows:

To secure a closer union of the independent telephone companies of the state, and to establish by the association of such non-competing companies a comprehensive telephone system which shall be maintained and operated as a competitor of the American Telephone & Telegraph Company either subsidary to or allied with the same, thereby securing to the people of the state the continuance of the benefits of competition in the public telephone service;

To improve and extend the telephone service of the state and to regulate the interchange of service between its members;

To establish and maintain a clearing house for the purpose of pro rating the earnings of telephone and telegraph business, and to make settlements thereof between the companies over whose lines the business is handled;

To establish rates and charges for interchanged business, and prepare and publish all necessary schedules, tariffs, and rate books covering the same, and whenever deemed necessary, to publish sectional, state or interstate telephone directories;

To promote the adoption of a uniform system of accounting and to prepare, buy or sell telephone record books, account books, printed matter, tickets, and to deal generally in telephone stationery and supplies;

To establish engineering and legal departments for the assistance of its members; to gather, publish and distribute information relating to all branches of the telephone business, and to establish and maintain a general field force for the protection and promotion of independent telephone interests;

To establish such offices or agencies as may be deemed advisable to assist its members in the sale of their securities, to act as agents in the transaction of any business for any of its members when desired by them, and to do every thing necessary to accomplish the purposes of the corporation and promote the general welfare of its members.

In the transaction of the business herein provided for, it is understood that the corporation is not organized for the purpose of profit but for the purpose of transacting same at cost for the mutual benefit of its members.

ARTICLE IV.

The authorized capital stock of the corporation shall be Ten Thousand Dollars ($10,000), divided into four hundred (400) shares of Twenty-five Dollars ($25) each. The corporation shall be deemed complete and may begin the transaction of business upon subscription being made to fifty (50) shares of its stock; the remainder of the stock shall be subscribed and issued as shall be determined by the board of directors. The stock shall be paid for in cash.

Each member of the corporation owning or operating five hundred (500) telephone units or less, (one unit shall consist of one telephone or one circuit mile of toll line), shall subscribe and pay for one (1) share of stock, and one (1) additional share for each additional five hundred (500) writs or major fraction thereof owned or operated by said company.

No stockholder shall be permitted to purchase or hold more than one share of stock for each five hundred (500) units in said system owned by it.

Any person, partnership, association or corporation owning or operating independent telephone exchanges or toll lines in the state of Nebraska or contiguous thereto and not allied with the American Telephone & Telegraph Company or any of its subsidiary companies, may become a stockholder in this corporation, upon duly executing a written application for membership in such form as the directors shall require, and subscribing for the required amount of stock, and upon securing the approval of the board of directors thereto, a certificate of membership shall be issued by the corporation to each stockholder admitted to membership therein, which certificate of membership, together with the application for membership, the articles of incorporation and by-laws, shall constitute the contract between the association and its members and between the members themselves.

The stock of any member in the corporation can only be transferred to another person, partnership, association or corporation possessing the qualifications and complying with the terms required by these articles of the orginal owner of stock and the transfer must be accompanied by the transfer of the plant of interest therein owned by the transferor. The stock and the plant or interest therein owned by any member of the corporation are to remain inseparable.

ARTICLE V.

This corporation shall begin business at the time these articles are filed in the office of the Secretary of State of the State of

Nebraska, and shall continue for one hundred (100) years thereafter unless sooner dissolved by a two-thirds vote of the stockholders.

ARTICLE VI.

The affairs of this corporation shall be conducted by a board of not less than nine (9) nor more than fifteen (15) directors, the number to be determined and chosen annually by the stockholders at each annual meeting. Such directors shall serve until the succeeding annual meeting of the corporation and until their successors are elected and qualified. The directors shall elect a president, vice-president, secretary and treasurer, and such other officers as they shall deem necessary to manage the business of the corporation.

A majority of the board of directors shall constitute a quorum for the transaction of business.

Any officer or director in this corporation who shall in any way become identified with any competing telephone system or corporation shall thereby be regarded as having tendered his resignation as an officer or director of the corporation, and the board of directors may proceed at once to elect his successor. All persons accepting office under this corporation shall do so with this express understanding. No person shall be eligible as an officer or director of this corporation unless he shall be a stockholder or part owner of a company holding stock in this corporation.

Not more than two directors in this corporation shall be elected from any one company holding membership therein. When the capital stock of two or more companies is controlled by one interest, not more than two directors shall be elected from all of the companies so controlled.

If a director part with his holdings in the corporation or the company from which he is chosen, the same shall operate as a resignation of his office.

The board of directors may fill all vacancies in its membership between the annual elections, by the election of persons to hold office for the remainder of the term.

ARTICLE VII.

The highest amount of indebtedness to which this corporation shall at any time subject itself, shall not exceed two-thirds of its capital stock issued.

ARTICLE VIII.

The board of directors are empowered to levy an assessment against the members thereof for the purpose of defraying the expenses of carrying on the work of the corporation and for no other purpose. The amount of such assessment shall not exceed ten (10) cents per unit in any one year.

ARTICLE IX.

The board of directors of the corporation may adopt and alter the by-laws and rules for the government of the members of the corporation, which shall be in full force and effect after their adoption by the board of directors and until the same are altered, modified or repealed by the stockholders at their regular annual meeting or a special meeting called for the purpose.

ARTICLE X.

Amendments to these articles may be made at any annual meeting of the stock holders or at any special meeting called for that purpose, a majority of all stock issued voting for such amendment.

**Application for Membership in the Independent Telephone System of Nebraska.**

The undersigned hereby applies for membership in the Independent Telephone System of Nebraska, and hereby makes the following statements and agreements for the purpose of obtaining membership and becoming a stockholder in said System.

**Statements.**

1. Name of applicant in full is.....
2. Principal place of business is.....
3. Incorporated under the laws of the state of..... on the.....day of.....
4. Capitalization.
   (a) Amount of common stock authorized $.....
   (b) Amount of common stock issued $.....
   (c) Amount of preferred stock authorized $.....
   (d) Amount of preferred stock issued $.....
   (e) Amount of bonds authorized $.....
   (f) Amount of bonds issued $.....
   (g) Amount of other indebtedness or obligations $.....
5. Present territory occupied .....
6. List of exchanges operated ..... Number telephones each exchange.....
7. Circuit miles of toll line..... Copper ..... Metallic iron .....Grounded iron ..... Between what points .....
8. Has the applicant any contracts with other telephone companies? If so, give the date contract, date termination, full description thereof .....
9. Rates charged for service .....

**Agreements.**

The undersigned hereby requests that the exchanges and lines now operated by it and which it may hereafter acquire, be made a part of the system of the Independent Telephone System of Nebraska and in case this application is accepted, the undersigned agrees with said association and each of its members, that its exchanges and lines shall be and remain a part of the said System for a period of twenty-five years and thereafter until the applicant shall give one year's written notice of its intention to withdraw from the said System. Said applicant agrees to connect its lines and exchanges with those of the other members of said System and to interchange business with the same, and that during the period above mentioned agrees that all business originating or terminating in its territory between points reached by its lines and the lines of said System and connecting lines, shall be sent or received only over the lines of the members of said System and connecting lines.

If admitted to membership in said corporation, applicant hereby agrees to subscribe and pay for one share of the stock of said corporation of the par value of Twenty-five Dollars ($25.00) and for one additional share for each additional five hundred (500) telephone units or major fraction thereof which applicant now or hereafter shall operate in excess of five hundred (500) units, said stock to be issued subject to the terms and conditions contained in the articles of incorporation.

Applicant further agrees not to transfer any stock issued to it to any person, partnership, association or corporation which does not possess the qualifications required by the articles of incorporation of members and stockholders therein, and agrees that its property is now non-Bell and that it will not make any change in the title or possession of any of its properties by reason of which its properties will become disconnected from said Independent Telephone System of Nebraska.

Said applicant further agrees, subject to any existing contracts, to adopt the rates and rules which shall be established by such System governing business interchanged between its members, and to abide by and enforce the same, and that it will maintain its telephone system in good repair and condition to furnish a good commercial telephone service to its patrons and the members of said System, and agrees to use its best endeavors to extend the same to fully meet the demands of the public for telephone service in its territory.

Applicant further agrees to pay all dues and assessments levied against it by the board of directors of the said System, not exceeding, however, the sum of ten cents (10c) per unit during any one year (one unit shall consist of one telephone or one circuit mile of toll line). The funds raised in this manner shall not be used to defray expenses incurred in maintaining a clearing house, such expense shall be pro rated among the companies whose business is cleared.

It is further understood and agreed that if this application is accepted, that said application and that of other members executed separately, the certificates that may be issued thereon, the articles of incorporation and the by-laws of said system now in force or as the same may be hereafter amended, shall be and constitute the contract of membership between the undersigned and the Independent Telephone System of Nebraska and between the several members thereof, governing the connections of their lines and systems and the itnerchange of business between the same, and that the violation of such contract by any member of said System shall give the said System or any member thereof, the right to enforce the same by suitable action against the member guilty of a breach thereof.

This application shall become a binding contract upon the acceptance of same by said Independent Telephone System of Nebraska, which acceptance shall be endorsed thereon.

IN WITNESS WHEREOF, the undersigned has caused this application to be duly executed by its properly authorized officers under the seal of its corporation.

.....

By.....

[SEAL] President.

Attest.....

Secretary.

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State of Nebraska
County of.....
ss.

I,.....

Secretary of .....
do hereby certify that at a meeting of its board of directors, held on the.....day of.....19...., of which meeting due notice was given to all members of said board, and at which a quorum was present, a resolution was duly adopted authorizing the officers of said company to execute the foregoing application for membership in the Independent Telephone System of Nebraska.

.....

In Witness Whereof, I have hereunto set my hand officially and caused to be affixed the seal of said corporation.

.....

[SEAL] Secretary.

Application acepted this.....day of.....
INDEPENDENT TELEPHONE SYSTEM OF NEBRASKA.
By.....

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## Brailey Admits That Bell Interests Backed His Deals.

At a meeting held at Columbus, Ohio, on November 29, James S. Brailey, Jr., is reported to have admitted that he had been working in co-operation with financial interests affiliated with the Bell telephone company, in his recent dealings whereby control was acquired of Independent local plants at Toledo, Cleveland, Columbus, Dayton, and a few smaller places, and of the long distance lines of the New Long Distance Company of Indianapolis, and the U. S. Telephone Company of Ohio. It developed during this meeting that Mr. Brailey had made efforts to

purchase the Columbus Citizens and the Home company of Dayton, but the owners refused to sell, being suspicious of him for refusing to declare the names of the real purchasers of the other properties. He then had F. R. Huntington of Columbus put the two latter deals through for him. It now appears that the Bell interests have employed Mr. Brailey to take up the same line of work which agents of the Central Union company had been prosecuting for some years.

Mr. Brailey is reported to have spoken in favor of a plan whereby the Bell company will withdraw from the local field, ceasing to operate its plant in competition with the Independents, and giving them a monopoly of local business, but retaining its long-distance connections and carrying all long-distance business, giving to local companies a commission on outgoing business.

The plan for the sale of the Bell plant involved in the transfer is for a consideration to be established by an appraisal by disinterested parties, with the understanding that the Bell company will discontinue its services before payments are made by the Independent companies which take over the property. How this plan can be adopted without violating the anti-trust law of the country and the state is not set forth. In the meantime, suits to prevent the transfer of the stock of the United States and Cuyahoga Telephone companies to Bell interests are being pushed, a hearing having been scheduled at Cleveland for Friday of this week.

The Brailey deals are also under fire in Missouri, where testimony before the court showed that certificates representing a large interest in the U. S. Telephone Company had been transferred to R. L. Day & Co., brokers, of New York. This firm is well known to be closely affiliated with Bell interests, having acted for them in connection with the absorption of the Independent plant at Baltimore and in other matters.

S. B. Jeffries, counsel for the minority stockholders of the U. S. Telephone Company recently announced the intention of applying to the St. Louis Circuit Court for a commissioner to take the testimony of George W. Perkins of the banking house of J. P. Morgan & Co.; Theodore N. Vail, president of the American Telephone and Telegraph Company; R. L. Day; Edward J. Hall; United States Senator W. Murray Crane of Massachusetts; representatives of the New York banking firm of Harvey Fisk & Sons, and others.

Among the Ohio Independents who attended the meeting at which Brailey is stated to have advanced the proposition for doing away with competition, were the following: Colonel H. A. Marting of Ironton; G. P. Thorpe, Wilmington; H. P. Folsom, Circleville; Joseph McKell, Chillicothe; O. M. Bake, Hamilton; Mark Cooke, Mt. Gilead, and W. G. Thompson, Hamilton, members of the Independents' special committee on the proposed merger; Mr. Brailey, F. A. Davis, Cyrus Huling and F. L. Beam, Mt. Vernon.

The Cleveland papers of November 30 in their reports of the meeting had a statement that this action of Mr. Brailey would put a stop to the plan for merging of Ohio Independents, which was brought up as a protective measure. It is known that members of the committee appointed by the Independents pledged themselves in open meeting to push the plans for this merger, and after the meeting Judge Louis Brucker gave out the following statement: "The plan proposed by the sub-committee of five was unanimously adopted by the committee of fifteen. This action means the success of the merger beyond question and the merger is now in course of completion. The committee can insure long distance connection to the Independent companies superior to any service ever enjoyed by the companies heretofore, either Bell or Indpendent. The organizers of the new company have considered the matter of finances for the extension and the further development of the property after the merger is effected and are assured by thoroughly responsible interests that ample funds will be provided."

### Indiana People Think They Have Evidence that Brailey Played Into Bell Hands.

That James S. Brailey, Jr., was simply an agent of the Bell telephone company, carrying out the project which its own authorized agents in regular employment have all along been advocating as the correct method of handling the telephone business in Indiana and Ohio, is the conclusion of close observers of telephone matters in the Indiana capital.

A correspondent of TELEPHONY writes from Indianapolis on November 30 as follows:

"The mystery which has clothed the telephone situation in Indiana is gradually clearing up, and the purposes of Mr. Brailey and his associates are being made known. The deal involving several million dollars in the purchase of a few principal Independent plants in Indiana and Ohio, and Independent long-distance lines, means that the Bell telephone interests have put up the money to acquire control of the long-distance lines in which Brailey was interested, while the few Brailey local systems are to have no competition in local service. The plan, as disclosed so far, means that the Bell company will take out all of its switchboards and disconnect all of its local subscribers in places where these deals have been made. Furthermore, assisted by Brailey's move, it will try to sell out its non-paying local systems at an appraisal value to Independent telephone companies which have vanquished it in the contest for business.

"The appraisal value is settled upon because in many cases the Bell plants were built for a high development, which, owing to the superiority of the Independent service, it found it impossible to attain, and it will be greatly relieved if it can pass the load on to the Independent telephone company. As a sign that its proposition to retire from local operation permanently is made in good faith, it is understood that the Bell people will disconnect their boards before the Independents are asked to pay for the physical value of the property as ascertained by impartial appraisals, wherever the proposition is accepted.

"The plan involves a monopoly of local service for such Independent companies as adopt it, but with control of the long-distance lines vested in the Bell telephone company, which will absorb all revenues therefrom except commissions for outgoing business.

"The officials of the Indianapolis Independent companies assert that while they have not been officially advised relative to the plans in detail, they have been made acquainted with the purposes which, if carried out, would mean a larger Bell long-distance service, although the Independents would continue to operate local exchanges, the latter to be augmented by the acquirement of the Bell subscribers in many localities."

Judge Charles Remster, of the circuit court, this week overruled a demurrer of the New Long-Distance Telephone Company to the complaint filed by Herman C. Stifel, of St. Louis, a director of the company, for permission to inspect the company's books. Judge Remster held that Mr. Stifel's amended complaint alleged sufficient facts to constitute a cause of action. The court gave the defendant company time to file its answer showing why the court should not issue an order directing the company to open its books to Mr. Stifel or his agent.

## International Convention Program and Exhibitors.

Following is the program of the convention of the International Independent Telephone Association, and list of exhibitors:

**Monday, Dec. 6.**

11:00 a. m.—Meeting of Executive Committee.
2:00 p. m.—Meeting of Advisory Board.
4:00 p. m.—Meeting of Committee on Registration.
5:00 p. m.—Meeting of Sergeant-at-Arms Committee.

**Tuesday, Dec. 7.**

10:00 a. m.—Convention Called to Order.
Invocation.
Address of Welcome, Hon. F. A. Busse, Mayor of Chicago.
Response, Hon. E. B. Fisher, Grand Rapids, Mich.
President's Address, Hon. E. H. Moulton, Minneapolis, Minn.
Officers' Reports.
"Practical Conference Plans," Gansey R. Johnston, Columbus, O.
Announcements.
Appointment of Committees.
Adjournment.

**Afternoon Session.**

2:00 p. m.—Technical and Practical Conference.
Gansy R. Johnston, Columbus, O., Chairman.
Discussions after each paper.
Question Box.

**Wednesday, Dec. 8.**

10:0. a. m.—State and Provincial Association Reports.
11:00 a. m.—"The Telephone Insurance Exchange," J. B. Hoge.
11:30 a. m.—"Continental Telephone and Telegraph Company," John A. Howard, Wheeling, W. Va.
Other Papers.
Committee Reports and Announcements.

**Afternoon Session.**

2:00 p. m.—Practical Conference.
Papers and discussions.
Question Box.
Announcements.

**Wednesday Evening—Banquet.**

7:00 p. m.—Banquet, Auditorium Banquet Hall. Ladies invited.

**Thursday, Dec. 9.**

10:00 a. m.—Papers and discussion.
Report of Committee on Resolutions.
Reports of Special Committees.
Report of Nominating Committee.
Election of Officers.
New and Unfinished Business.
Adjournment.

### CONFERENCE PAPERS AND ADDRESSES.

"Economy of Proper Engineering," Kempster B. Miller, Consulting Engineer, Chicago.

"Co-operation as a Factor in Development," Franklin H. Reed, Editor "Telephony," Chicago.

"Listing Toll Business to Show Circuit Revenue," Frank F. Fowle, Consulting Electrical Engineer, Chicago.

"Cost of Collecting Income," Chas. E. Tarte, General Manager Citizens Telephone Co., Grand Rapids, Mich.

"Operating a Small Telephone Exchange," P. L. Burns, B. & B. Telephone Co., Hutchinson, Kas.

"The Telephone and the School," Arthur Bessey Smith, Electrical Engineer, Chicago.

"Economical Exchange and Office Appliances and Methods," John W. Coffey, Secretary Indiana Traffic Association, Indianapolis.

"Telephone Problems and Suggestions," Volney D. Cousins, Professor Telephone Engineering, Purdue University.

"Some Economic Problems in Telephony," J. P. Boylan, Cleveland, O.

"Coded Telephone Cables," S. D. Levings, New York City.

"Operators; Answering Jacks; Maintenance," H. E. Davis, Superintendent of Equipment, Topeka Telephone Co., Topeka, Kas.

"Practical Methods to Handle Increased Volume of Toll Business," W. S. Vivian, Secretary Michigan Telephone Traffic Association.

"Unit Cost in Accounting," A. F. Adams, Engineer for Gary Properties, Joplin, Mo.

"A Study in Depreciation," W. Roy McCanne, Rochester, N. Y.; Chas. E. Tarte, Grand Rapids, Mich.; G. R. Johnston, Columbus, O.

"Scientific Business Methods," Prof. A. F. Sheldon, Sheldon School Scientific Salesmanship, Chicago.

"The Purchasing Department," Floyd N. Dull, Purchasing Agent Home Telephone Co., Detroit, Mich.

"How Good Construction Reduces Depreciation," C. H. Judson, Chief Engineer Independent Telephone Co., Seattle, Wash.

### LIST OF EXHIBITS.

Room. Exhibitor.

604-606—American Automatic Telephone Co., Urbana, O., Automatic Switchboards and Telephones.
656—American Electric Mfg. Co.
126—American Electric Telephone Co., Chicago., Switchboards, Telephones and Parts.
626—American Steel & Wire Co., Chicago, Wires and Cables.
637—Anhydrous Battery Co., Chicago, Batteries.
614-616—Automatic Electric Co., Chicago, Automatic Telephones and Systems.
607—Cook, Frank B., Chicago, Protective Apparatus and Cable Terminals.
609-640—Corwin Telephone Mfg. Co., Chicago, Interior Telephones, Board, Harmonic Ringers, etc.
—Duplex Metals Co., Philadelphia, Copper-clad Steel Wire.
611—Doe Battery Co., Cleveland, O., Batteries.
662—Electric Appliance Co., Chicago, Cracraft-Leich Telephone Equipment; General Telephone Supplies, Phones, Switchboards and Parts.
639—Illinois Electric Co., Chicago, Construction Material, Tools, Specialties.
648—Kellogg Switchboard & Supply Co., Chicago, Switchboards, Telephones and Parts.
647—Miller Anchor Co., Norwalk, O., Anchors.
601-602-636—Monarch Telephone Mfg. Co., Chicago, Switchboards, Telephones, Time Service Systems and Supplies, and Parts.
660—Nungesser Electric Battery Co., Cleveland, O., Batteries.
646—Pardee, F. W., Chicago, Batteries, Wire, Receiver Shells.
Durant Electric Co., Ironite Drop Wire, Materials and Apparatus.
642-644—Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y., Chicago and Kansas City, Mo., Telephone Apparatus, Aerial and Underground Cable.
608-610—Swedish-American Telephone Co., Chicago, Telephones, Switchboards and Parts.
664—Telechronometer Co.
615—Wales Visible Adding Machine Co., Wilkes-Barre, Pa., and Chicago.
658—Warner Electric Co., Muncie, Ind., Pole Changers.
Ante Room—Telephone Fire Insurance Exchange, J. B. Hoge, General Agent, Chicago.
540—Headquarters Illinois Independent Telephone Association.

### COMMITTEES.

Reception Committee.

Chairman, Frank H. Woods, Lincoln, Neb; Alabama, Wm. H. Bryant, Mobile; Arkansas, A. E. Boqua, Fort Smith; California, Frank Graves, Los Angeles; Canada, Francis Dagger, Toronto; Colorado, E. F. Follansbee, Paonia; Connecticut, Harrison B. Freeman, Jr., Hartford; Georgia, C. J. Simmons, Atlanta; Idaho, C. J. Sinsel, Boise City; Illinois, C. B. Cheadle, Joliet; Indiana, Walter J. Uhl, Logansport; Iowa, H. S. Baker, Sioux City; Kansas, W. P. Hemphill, Topeka; Kentucky, Geo. S. Shanklin; Louisiana, Chas. F. Speed, Monroe; Michigan, W. J. Melchers, Alma; Minnesota, D. M. Neill, Red Wing; Missouri, Hunter L. Gary, Macon; Nebraska, W. J. Stadelman, Norfolk; New York, R. Max Eaton, Niagara Falls; North Carolina, Wm. A. Wynne, Raleigh; Ohio, W. F. Laubach, Akron; Pennsylvania, C. E. Wilson, Philadelphia; Tennessee, R. H. Polk, Memphis; Texas, J. B. Earle, Waco; Virginia, W. N. McAnge, Suffolk; Washington, Hervey Lindley, Seattle; West Virginia, W. C. Handlan, Wheeling; Wisconsin, W. F. Goodrich, La Crosse.

Entertainment Committee.

Chairman, J. G. Ihmsen, Chicago; H. D. Critchfield; LeRoy D. Kellogg, Chicago; H. B. McMeal, Chicago; E. E. Yaxley, Chicago.

Registration Committee.

Chairman, W. S. Vivian, Grand Rapids, Mich.; John H. Ainsworth, Dayton, O.; W. J. Thill, Des Moines, Ia.; R. E. Mattison, Lincoln, Neb.; John W. Coffey, Indianapolis, Ind.; W. B. Tompkins, Quincy, Ill.; C. L. Brown, Abiline, Kas.; J. C. Crowley, Jr., Superior, Wis.; A. R. Green, Wright City, Mo.; O. B. Anderson, Ozark, Ark.; H. C. Jones, Owensboro, Ky.; W. A. Wynne, Raleigh, N. C.; A. A. Burch, Battle Creek, Mich.; Lloyd Beeghley, Weston, W. Va.

Sergeant-at-Arms Committee.

Chairman, Richard Valentine, Janesville, Wis.; J. A. Zimmerman, Valley Falls, Kas.; F. M. Howard, Burr Oak, Mich.; Geo. H. Metheany, Lima, O.; R. E. Gordan, El Paso, Ill.; J. W. Hull, Grant City, Mo.; Geo. Thorward South Bend Ind.; Geo. W. Taylor, Macco, Ky.; J. A. White, Waverly, Kas.; T. H. Pollock, Plattsmouth, Neb.; Hugh Amos, Burnsville, W. Va.

Auxiliary Committee.

Chairman, E. H. Moulton, Minneapolis, Minn.; W. H. Bassett, St. Louis, Mo.; Jas. S. Brailey, Jr., Toledo, O.; Frank L. Beam, Mt. Vernon, O.; H. D. Critchfield, Chicago, Ill.; A. C. Davis, Parkersburg, W. Va.; F. A. Davis, Columbus, O.; Hart F. Farwell, Terre Haute, Ind.; E. B. Fisher, Grand Rapids, Mich.; Wm. Fortune, Indianapolis, Ind.; Theodore Gary, Macon, Mo.;

## Death of L. L. C. Brooks.

Mr. L. L. C. Brooks, vice-president of the Tri-State Telephone & Telegraph Company, died at his home in St. Paul, Minn., on November 29. He had been ill for six days with typhoid-pneumonia.

Mr. Brooks had been a resident of St. Paul for about twenty-five years. About six years ago he became associated with Hon. E. H. Moulton in the management of the Tri-State company, and has been most active in the development of this large and remarkably successful public service corporation. He was also the head of the Northern Heating and Lighting Company, which has the municipal lighting contract for St. Paul, and operates an immense plant from which electricity for light and power is distributed throughout the city.